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THE NEW YORKER

THE TECHNOLOGY ISSUE

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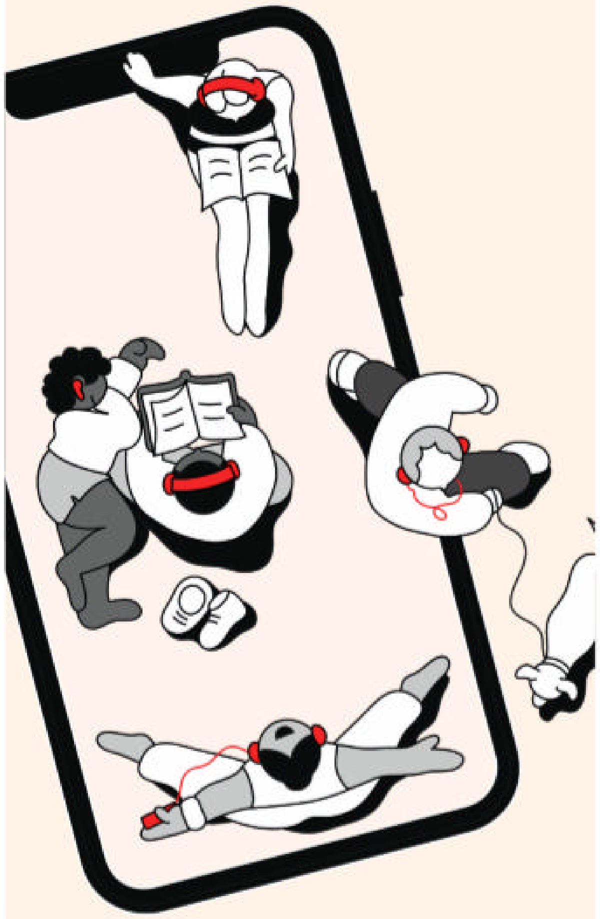

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THIS WEEK ON NEWYORKER.COM

ANNALS OF TECHNOLOGY

Matthew Hutson on David Baker's quest for a scientific holy grail: the ability to build designer proteins.

U.S. JOURNAL

A school on Chicago's West Side is learning how to support students virtually. Peter Slevin reports.

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LEFT: JULIA DUFOSSÉ; RIGHT: SAMANTHA CABRERA FRIEND FOR THE NEW YORKER

THE MAIL

HARVESTING HOPE

I could not agree more with Rebecca Mead's lovely article about the therapeutic benefits of having one's hands in the soil ("Nature and Nurture," August 24th). Her words brought back memories from fifteen years ago, when I was taking part in a development project in an aspiring eco-village in South Africa. The facilities were rented every few weeks to a Buddhist group that brought victims of the violence in Zimbabwe to the village for workshops and meditation sessions. On their afternoon breaks, these adults, many of whom had suffered rape, loss of livelihood, hunger, and torture, came to life as they helped clear new garden beds. As Mead notes, "Gardening can be especially helpful for people suffering from P.T.S.D.," and that seemed to be the case for these refugees. I will never forget seeing them wielding their hoes and pickaxes, singing and laughing, as if they had suddenly been brought back home. I first heard the achingly beautiful song "Silang Mabele," by Vusi Mahlasela, during that time. Not knowing enough Setswana to understand the lyrics fully, I believed it was a love song. Years later, I learned that it was a call to end poverty—a love song of a different sort. I'm grateful to Mead for the reminder of how close to us a source of healing can be.

Erika Nelson
Oxford, Ohio

As a psychoanalyst immersed in gardening, I found Mead's piece to be enchanting and thought-provoking. I liked her mention of Donald Winnicott's theory of "transitional" spaces, and also Sue Stuart-Smith's suggestion that a garden can be "a Winnicottian 'in-between.'" My own garden exemplifies the spatial concept of a transition from enclosure to freedom, proceeding from a cottage garden hugging the house to a woodland garden near the perimeter of the property, where I like to preserve the illusion of wild space beyond. During the past forty-plus years, I have observed an unfortunate turn toward gardening as decorating: modern interior spaces, increasingly sterile and stripped of personality, seem to be transplanted outside, with an emphasis on fostering order, rather than on the playful randomness that might otherwise emerge. Similarly, psychoanalysis seeks to cultivate curiosity about the symptoms that a patient is experiencing, as opposed to pulling out symptomatic "weeds" by means of an imposed behavioral regime. I consider my garden and my professional career to be spaces of spontaneous emergence; I have learned to resist my urge to control my surroundings, and instead strive to maintain an attitude of tolerance, patience, and, above all, wonder and appreciation.

Elaine P. Zickler
Moorestown, N.J.

ODE TO A HERO

I belong to a group of retirees meeting weekly (now via Zoom) to discuss articles from the previous week's *New Yorker*. We have valued the many pieces on health-care providers throughout this pandemic, but we especially appreciated Jennifer Gonnerman's profile of Terence A. Layne, a New York City bus driver ("Survival Story," August 31st). Gonnerman reveals Layne's complexity and also his nobility, telling us about his musician father, his time spent with the Nation of Islam, his stints in prison, the compassion he shows to his passengers and his co-workers, and his humane poetry. The respect with which she treats her subject made this piece an appropriate topic for our Labor Day discussion: it shines a light on the trials and triumphs of the ordinary working people whom many of us often take for granted, in spite of the necessary, even heroic, roles they play in our daily lives.

Miriam Burt
Green Valley, Ariz.

•

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In an effort to slow the spread of the coronavirus, many New York City venues are closed.
Here's a selection of culture to be found around town, as well as online and streaming.

SEPTEMBER 23 – 29, 2020

GOINGS ON ABOUT TOWN

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Lincoln Center is presenting the city's main annual movie event, the **New York Film Festival,** at virtual and drive-in screenings. This year's edition features the New York premières of Chloé Zhao's drama "Nomadland," starring Frances McDormand, and Garrett Bradley's documentary "Time," as well as the world premières of the first three installments of "Small Axe"—Steve McQueen's five-part film series about London's West Indian community—including the musical romance "Lovers Rock," set in 1980 and starring Micheal Ward (pictured above).

ART

Alex Dodge

The characters in this Brooklyn painter's new works, at Klaus von Nichtssagend, seem to float in a desolate virtual space. Their blue-to-white gradient backgrounds are actually inspired by a technique that predates digital design: Dodge studied traditional woodblock printing in Japan and borrows the *bokashi* cross-fade technique to create his illusions of otherworldly pictorial depth. The seamless, textureless expanses contrast with the artist's hallmark raised patterns of stencilled oil paint (imagine laser-cut fondant), lending his works a strange heft. Dodge's subjects—catlike animals in bespoke onesies, a figure in a Muppet-esque costume, another tiptoeing beneath a patchwork quilt—seem to have stepped out of cartoon narratives. But their comic qualities are almost overwhelmed by their implicit menace, underscored by the uncanny gravitas of the featureless realms they inhabit.—*Johanna Fateman (klausgallery.com)*

Gerhard Richter

The shock of four abstract paintings titled "Birkenau," based on clandestine photographs that were smuggled out of Auschwitz in 1944, retroactively exposes a thread of sorrow and guilt in the invariably subtle work of this German painter. Originally exhibited at the former Met Breuer in the exhibition "Gerhard Richter: Painting After All," they are now installed in the Lehman Wing of the Met's Fifth Avenue headquarters. (The paintings are accompanied by their source photographs and the artist's work "Mirror, Blood Red," from 1991, on reflective glass.) Who dares take history's ultimate obscenity as a theme for art? For Richter, the provocation makes biographical sense. Born in Dresden in 1932, he is haunted by memories and associations from the Third Reich and the Second World War. Previously indirect in his references to the horror, he has reason to focus on it now: the Met Breuer retrospective might have been the last show of his six-decade career as a chameleon stylist and a visual philosopher of painting. Richter brings to everything an attitude of radical skepticism, but it has dawned on many of us, over the years, that plenty of emotion, like banked fire, underlies his restless ways.—*Peter Schjeldahl (metmuseum.org)*

Nicola Tyson

This British-born painter's vibrant self-portraits, which are featured prominently in her exhibition "Sense of Self," at the Petzel gallery's East Sixty-seventh Street space, all boast a telltale shock of red hair. It's a long-standing motif in Tyson's ever-evolving lawless strain of figuration. But the other forms of her new paintings—expressive composites evoking petals, tendons, energy fields, and draped volumes—defy identification. In one canvas, the artist appears with roughly sketched blue butterfly wings; in another, she becomes a mountainous blur beneath a lemon-lime sky. Tyson is a powerful colorist, but a drawing show (on the gallery's Web site) reveals a flair for graphite, too. The silvery works on paper are both funny and moody, placing botanical and mammalian silhouettes in abstract vignettes and landscapes. Several time-lapse videos—intimate scenes of Tyson drafting her compositions from start to finish—document the same peculiar spontaneity that animates her larger paintings.—*J.F. (petzel.com)*

"Vida Americana"

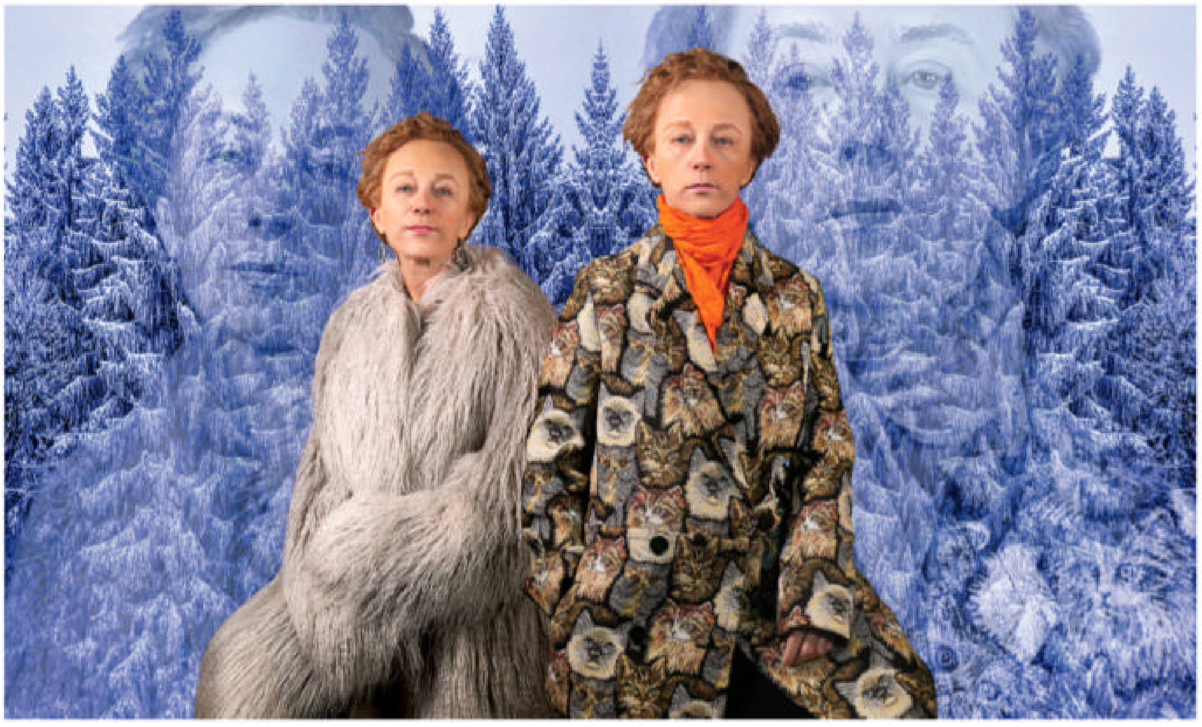
This thumpingly great show, now reopened at the Whitney, picks an overdue art-historical fight. The usual story of its subjects, the great Mexican muralists of the mid-twentieth century, revolves around young, often immigrant aesthetes striving to absorb European modernism. A triumphalist tale composed backward from its climax—the postwar success of Abstract Expressionism—it brushes aside the prevalence, in the thirties, of politically themed figurative art: social realism, more or less, which became ideologically toxic with the onset of the Cold War. What to do with the mighty legacy of the era's big three Mexican painters, Diego Rivera, José Clemente Orozco, and David Alfaro Siqueiros? As little as possible has seemed the rule, despite the seminal influence of Orozco and Siqueiros on the young Jackson Pollock. But, with some two hundred works by sixty artists and abundant documentary material, the curator Barbara Haskell reweaves the sense and sensations of the time to bring it alive. Without the Mexican precedents of amplified scale and passionate vigor, the development of Abstract Expressionism lacks crucial sense. As for the politics, consider the persistently leftward tilt of American art culture ever since—a residual hankering, however sotto voce, to change the world.—*P.S. (whitney.org)*

MUSIC

Natanael Cano: "Soy el Nata"

TRAP CORRIDO Natanael Cano, a nineteen-year-old artist from Sonora, Mexico, blasted the trap corrido sound into the mainstream when Bad Bunny joined him on a remix of "Soy el Diablo." The song showed how deftly a new generation has blended regional Mexican instrumentation with blustery, hip-hop-inspired lyricism. Earlier this year, Cano solidified his trap bona fides with the swaggering hooks and wavy production of "Trap Tumbado," but his follow-up, "Soy el Nata," is a return to folk-driven fare. He opts for prickly guitars and a deeper focus on storytelling; it's only on the closer, "Pal Que Dijo Que No," that his dexterity as a rapper surfaces, as he dashes

AT THE GALLERIES



What does **Cindy Sherman** miss most about pre-pandemic living in New York City? "Going to the movies," she told me the other day. The answer is unlikely to surprise anyone familiar with the artist, who is one of the greatest working today. Sherman has been losing herself in movies for forty years, playing to perfection a succession of roles—ingénues, clowns, socialites, aging screen queens—in still photographs that are as psychologically intense and disarmingly beautiful as any two-hour film. Sherman may be the star of her indelible pictures, but that doesn't make them self-portraits. As Calvin Tomkins wrote in a Profile of her in this magazine in 2000, these are images "for which she had posed but in which she was not present." Sherman's latest exhibition, at Metro Pictures (opening Sept. 26), finds her slipping into the unsettling identities—and the Stella McCartney-designed outfits—of new men and women (including the strawberry-blond couple in "Untitled #612," from 2019, above).—*Andrea K. Scott*

OPPOSITE: PARISA TAGHIZADEH / COURTESY AMAZON PRIME VIDEO;
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It is not known if OPDIVO and YERVOY are safe and effective when used in children younger than 18 years of age.

What is the most important information I should know about OPDIVO and YERVOY?

OPDIVO and YERVOY are medicines that may treat certain cancers by working with your immune system. OPDIVO and YERVOY can cause your immune system to attack normal organs and tissues in any area of your body and can affect the way they work. These problems can sometimes become serious or life-threatening and can lead to death and may happen anytime during treatment or even after your treatment has ended. Some of these problems may happen more often when OPDIVO is used in combination with YERVOY.

YERVOY can cause serious side effects in many parts of your body which can lead to death. These problems may happen anytime during treatment with YERVOY or after you have completed treatment.

Call or see your healthcare provider right away if you develop any symptoms of the following problems or these symptoms get worse. Do not try to treat symptoms yourself.

- **Lung problems (pneumonitis).** Symptoms of pneumonitis may include: new or worsening cough; chest pain; shortness of breath
- **Intestinal problems (colitis) that can lead to tears or holes in your intestine.** Signs and symptoms of colitis may include: diarrhea (loose stools) or more bowel movements than usual; mucus or blood in your stools or dark, tarry, sticky stools; stomach-area (abdomen) pain or tenderness; you may or may not have fever
- **Liver problems (hepatitis) that can lead to liver failure.** Signs and symptoms of hepatitis may include: yellowing of your skin or the whites of your eyes; nausea or vomiting; pain on the right side of your stomach area (abdomen); drowsiness; dark urine (tea colored); bleeding or bruising more easily than normal; feeling less hungry than usual; decreased energy
- **Hormone gland problems (especially the thyroid, pituitary, and adrenal glands; and pancreas)**. Signs and symptoms that your hormone glands are not working properly may include: headaches that will not go away or unusual headaches; extreme tiredness or unusual sluggishness; weight gain or weight loss; dizziness or fainting; changes in mood or behavior, such as decreased sex drive, irritability, or forgetfulness; hair loss; feeling cold; constipation; voice gets deeper; excessive thirst or lots of urine
- **Kidney problems, including nephritis and kidney failure.** Signs of kidney problems may include: decrease in the amount of urine; blood in your urine; swelling in your ankles; loss of appetite
- **Skin problems.** Signs of these problems may include: skin rash with or without itching; itching; skin blistering or peeling; sores or ulcers in mouth or other mucous membranes
- **Inflammation of the brain (encephalitis)**. Signs and symptoms of encephalitis may include: headache; fever; tiredness or weakness; confusion; memory problems; sleepiness; seeing or hearing things that are not really there (hallucinations); seizures; stiff neck
- **Problems in other organs.** Signs of these problems may include: changes in eyesight; severe or persistent muscle or joint pains; severe muscle weakness; chest pain

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- **Eye problems.** Symptoms may include: blurry vision, double vision, or other vision problems; eye pain or redness

Get medical help immediately if you develop any of these symptoms or they get worse. It may keep these problems from becoming more serious. Your healthcare team will check you for side effects during treatment and may treat you with corticosteroid or hormone replacement medicines. If you have a serious side effect, your healthcare team may also need to delay or completely stop your treatment with OPDIVO and YERVOY.

What should I tell my healthcare provider before receiving OPDIVO and YERVOY? Before you receive OPDIVO and YERVOY, tell your healthcare provider if you: have immune system problems (autoimmune disease) such as Crohn's disease, ulcerative colitis, lupus, or sarcoidosis; have had an organ transplant; have lung or breathing problems; have liver problems; have any other medical conditions; are pregnant or plan to become pregnant. OPDIVO and YERVOY can harm your unborn baby. **Females who are able to become pregnant:** Your healthcare provider should do a pregnancy test before you start receiving OPDIVO and YERVOY.

- You should use an effective method of birth control during and for at least 5 months after the last dose. Talk to your healthcare provider about birth control methods that you can use during this time.
- Tell your healthcare provider right away if you become pregnant or think you are pregnant during treatment. You or your healthcare provider should contact Bristol Myers Squibb at 1-800-721-5072 as soon as you become aware of the pregnancy.
- **Pregnancy Safety Surveillance Study:** Females who become pregnant during treatment with YERVOY are encouraged to enroll in a Pregnancy Safety Surveillance Study. The purpose of this study is to collect information about the health of you and your baby. You or your healthcare provider can enroll in the Pregnancy Safety Surveillance Study by calling 1-844-593-7869.

If you are breastfeeding or plan to breastfeed: It is not known if OPDIVO or YERVOY passes into your breast milk. **Do not** breastfeed during treatment and for 5 months after the last dose.

Tell your healthcare provider about all the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements.

Know the medicines you take. Keep a list of them to show your healthcare providers and pharmacist when you get a new medicine.

What are the possible side effects of OPDIVO and YERVOY?

OPDIVO and YERVOY can cause serious side effects, including:

- **See "What is the most important information I should know about OPDIVO and YERVOY?"**
- **Severe infusion reactions.** Tell your doctor or nurse right away if you get these symptoms during an infusion of OPDIVO or YERVOY: chills or shaking; itching or rash; flushing; difficulty breathing; dizziness; fever; feeling like passing out

The most common side effects of OPDIVO when used in combination with YERVOY include: feeling tired; diarrhea; rash; itching; nausea; pain in muscles, bones, and joints; fever; cough; decreased appetite; vomiting; stomach-area (abdominal) pain; shortness of breath; upper respiratory tract infection; headache; low thyroid hormone levels (hypothyroidism); decreased weight; dizziness.

These are not all the possible side effects of OPDIVO and YERVOY. Call your doctor for medical advice about side effects.

You are encouraged to report negative side effects of prescription drugs to the FDA. Visit www.fda.gov/medwatch or call 1-800-FDA-1088.

OPDIVO (10 mg/mL) and YERVOY (5 mg/mL) are injections for intravenous (IV) use.

This is a brief summary of the most important information about OPDIVO and YERVOY. For more information, talk with your healthcare provider, call 1-855-673-4861, or go to www.OPDIVO.com.

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CLASSICAL LIVE STREAM

The New York City composer collective Bang on a Can, in its initial response to the isolation caused by the pandemic, reimagined its signature marathon-concert format for a virtual audience. Now, in its latest offering, the group seeks to similarly transform the old-fashioned notion of a domestic soirée. Michael Gordon, one of the collective's founders, wrote "House Music," in 2018, for the charismatic cellist **Ashley Bathgate,** expressly intending the hour-long set of characterful, virtuosic pieces to be performed at small gatherings. Adhering to that concept, Bathgate will perform the piece in her own home, on Sept. 23, as a ticketed event streaming live for a limited audience, providing a sense of intimacy and connection.—*Steve Smith*

through a beat laced with dramatic strings and informed by corrido traditions.—*Julyssa Lopez*

Simone Dinnerstein: "A Character of Quiet"

CLASSICAL In June, at her Brooklyn home, Simone Dinnerstein put together the album "A Character of Quiet," playing the piano as a friend, the producer Adam Abeshouse, recorded her from another room. That intimacy comes through in a beautifully considered program of Philip Glass études and Schubert's Piano Sonata in B-Flat Major, D. 960. Dinnerstein, an original and agile player, has made a quarantine album that feels contemplative without being morose. When she plays Glass's Étude No. 6, any clichés about his robotic repetitiveness melt away; her rendition is plainly emotional. The autumnal colors, subtly graduated dynamics, and small breaths in that performance reappear later, as a gratifying echo, in the first movement of the Schubert sonata. The album closes with the drama of the sonata's allegro section—a reminder that quiet can contain multitudes.—*Oussama Zahr*

Avalon Emerson: "DJ-Kicks"

ELECTRONIC A mad scientist's mischievousness runs through the Berlin-based American d.j. and producer Avalon Emerson's "DJ-Kicks," the seventy-second volume of the long-running mix series. The mix's many voices are often altered but always ostensibly casual, the d.j.'s among them. Emerson kicks things off with her own synth-pop cover of the Magnetic Fields' "Long-Forgotten Fairytale" before hopping, with casual aplomb, among disparate, attention-grabbing selections. The grinding guitar-and-bass pulse of the Dirtbombs' "Sharivari" meshes with the punk-funk finery of Rub and Tug remixing Chk Chk Chk, and DJ Sense's "Finest" mates an S.O.S. Band sample with a splashy breakbeat.—*Michaelangelo Matos*

The Flaming Lips: "American Head"

ROCK The thrilling stylistic mutations that defined the Flaming Lips during their golden years were unsustainable in the long run, but the front man Wayne Coyne's continued pursuit of some radiant, existential truth has made this Oklahoma oddity one of the best bands to age alongside. The Lips' elegiac new LP, "American Head," conceived after Coyne became obsessed with a pre-fame trip that Tom Petty took to Tulsa in the seventies, is rooted in a labyrinthine concept: What would have happened if Petty had come in contact with Coyne's "older brothers and their drug-dealing biker friends," and made an album informed by substances proffered by said degenerates? The Lips' resulting reverie is a graceful meditation on mortality, family, and the hazy recollections of youth slipping into adulthood. Rarely does "American Head" resemble Petty, or even the seventies, but it captures a greater emotional nub, one seemingly beamed in from a faded America of decades past.—*Jay Ruttenberg*

Thelonious Monk: "Palo Alto"

JAZZ After nearly a decade of fecund invention from the likes of Miles Davis, Ornette Coleman, and John Coltrane, as the jazz world continued to embrace the new, there was Thelonious Monk, going his own way, as usual. In 1968, he was still performing work that he had been drawing on for decades, interspersed with tunes such as "I Love You Sweetheart of All My Dreams," a Rudy Vallee ditty from the nineteen-twenties. But, boy, did he play it well. On this newly discovered live recording, captured at a one-off gig in a Palo Alto high school, the pianist and composer leads a practiced quartet through a typical but thrilling program of favored tunes—including the imperishable ballad "Ruby, My Dear" and the earthy "Blue Monk"—proving that focussed group interplay can be as compelling as the deliberate iconoclasm of Monk's contemporaries.—*Steve Futterman*

DANCE

Erasing Borders Dance Festival

In yet another instance of making lemonade out of lemons, this yearly festival of Indian dance has gone virtual. On the upside, the format permits participation by performers who might have found it challenging to travel to New York in the best of times. The resulting lineup, which will be available nightly at 8:30, Sept. 20-27, on the Indo-American Arts Council's Facebook page, is particularly diverse, with participants in Assam, Singapore, West Bengal, Texas, and Boston. On Sept. 20, Shambhu Nath Karmakar's ensemble presents the spectacular dances of Purulia Chhau, a dance-theatre form from Bengal that's acrobatic, muscular, and extravagantly masked. Krishnakshi Kashyap will dance a lasya, a feminine role traditionally performed by men in the sattriya dance tradition, from the region of Assam, on Sept. 21. And, on Sept. 25, Barkha Patel, a kathak dancer based in New York, will perform a work inspired by Bahuchara Mata, a deity venerated in the Indian transgender community.—*Marina Harss (facebook.com/iaac.us)*

Lula Washington Dance Theatre

The Ford amphitheatre, nestled in the Hollywood Hills, had to cancel its centennial season this summer, but it has mustered a robust collection of online offerings for the fall. On Sept. 24, it streams a 2018 performance at the Ford by Lula Washington Dance Theatre, another local institution, founded in South Los Angeles, in 1980, as an outlet for minority artists. The program is well fortified with guest choreography, from Kyle Abraham's sombre and subtle "Hallowed" to Rennie Harris's exhilarating "Reign," a gospel-house spiritual-cardiovascular workout that makes fine use of the theatre's steps. Lula Washington herself provides the finale, an old-school dance party to Earth, Wind & Fire hits.—*Brian Seibert (theford.com)*

ILLUSTRATION BY JET HILFERINK

Sara Mearns / Pam Tanowitz

Most of the entries in New York City Center's illuminating series "Live @ Home Studio 5 / Great American Ballerinas" have involved a first-rate ballerina receiving remote coaching from another, older ballerina with deep experience in a canonical role. But the installment débuting on Sept. 23 (and available on YouTube and on City Center's Web site, through Sept. 29) is different. A great American ballerina, Sara Mearns, of New York City Ballet, is joined, virtually, by a great American choreographer, Pam Tanowitz, who works with Mearns on new solo material.—*B.S. (nycitycenter.org/studio5)*

"Our Labyrinth"

In this hybrid of installation and dance, by the Taiwanese-American artist Lee Mingwei, dancers slowly push a pile of rice around the galleries of a museum, creating a pattern and a pathway through the space. The first iteration of the work came to life at the Taipei Fine Arts Museum, in 2015. At the Metropolitan Museum of Art, the dance, performed simultaneously with a voice solo, is both meditation and offering, movement and stillness. Mingwei has invited the choreographer Bill T. Jones to reimagine the concept for New York audiences, in the context of the "tremendous loss and social upheaval" of 2020. The dancers, who will be filmed when the Met is empty, during off-hours, will include I-Ling Liu, formerly of the Bill T. Jones/Arnie Zane Company, on Sept. 16; the krumper Brian HallowDreamz Henry, on Sept. 23; and Sara Mearns, of New York City Ballet, on Sept. 30. You can watch it on Wednesdays, from noon to 4:30, on the Met's YouTube page.—*M.H. (youtube.com/user/metmuseum)*

Rambert

On Sept. 26, the British company live-streams "Drawn from Within," a new work by the physically aggressive Belgian choreographer Wim Vandekeybus. The piece, with its themes of death and birth, is designed for the moment and the medium: the camera follows masked dancers around the studio, loading bay, and rooftop of Rambert's London facility. Unlike nearly all virtual dance performances of late, this one has a cost—thirteen dollars. Generously, Rambert is spreading some of that money around, by encouraging people to purchase tickets for the event from partnering institutions around the world, such as the Brooklyn Academy of Music.—*B.S. (bam.org)*

THE THEATRE

Incidental Moments of the Day

In the past decade, Richard Nelson has written and directed seven plays about the Apple family; three of them were conceived specifically for Zoom, including this latest one, which concludes the cycle. Nelson is not one for big dramatic moves or demonstrative exchanges, yet his characters' reserve acquires a force of its own—especially because we have become so familiar with the Apple siblings that we know their foibles and can interpret what they say as readily as their evasions. The final installment maintains this tack even as it touches on racial politics, which may disappoint viewers looking for more verbal fireworks. The best part of the show, as always, is the cast, which includes Charlotte Bydwell, Stephen Kunken, Sally Murphy, Laila Robins, Jay O. Sanders, and Maryann Plunkett as M.V.P. The actors' rapport is so natural and fluid that you feel as if you're eavesdropping on an actual family's Zoom catch-up, complete with stretches of awkwardness and passive aggression.—*Elisabeth Vincentelli (theapplefamilyplays.com)*

MOVIES

Hissein Habré, a Chadian Tragedy

The Chadian director Mahamat-Saleh Haroun's intimate and impassioned documentary, from 2016, begins with the story of his own discovery of the horrors of Habré's dictatorship in Chad, which lasted—with American support—from 1982 to 1990. Travelling the country to meet with the regime's victims, Haroun brings deep compassion and controlled rage to accounts of moral obscenities, while also recording accounts of solidarity, under terrifying circumstances, among the victims. They display their scars and discuss, with bitter frankness, the details of torture, the unhealed wounds of their broken bodies and broken minds. The film also manages to bring a victim and a torturer together; their misunderstandings blend anger and mistrust with grim absurdity. The atrocities that survivors describe and mime defy imagination—and the survivors' anguish is heightened by Habré's impunity, which came to an end in the course of the filming, with his arrest, conviction, and imprisonment for crimes against humanity. Yet, as Haroun shows, it's cold consolation for the people who endured his depravity.—*Richard Brody (Streaming on OVID.tv.)*

North Country

After the success of "Whale Rider," the director Niki Caro shifted her gaze from her native New Zealand to the iron mines of Minnesota, a more forbidding prospect altogether. It is there that Josey (Charlize Theron) comes to make a new start, bringing her two children from a bruised marriage. With the encouragement of her friend Glory (Frances McDormand), Josey takes a job at the mines, runs head first into the brutish scorn of male co-workers, and determines to do something about it. On paper, Caro's film sounds worthy to the point of glumness, and viewers hoping for humor will find little cheer, though any fears that the story will slacken or slump are dispelled by the drive of the performances. Theron's anger is all too credible, and she is

THEATRE ON TELEVISION

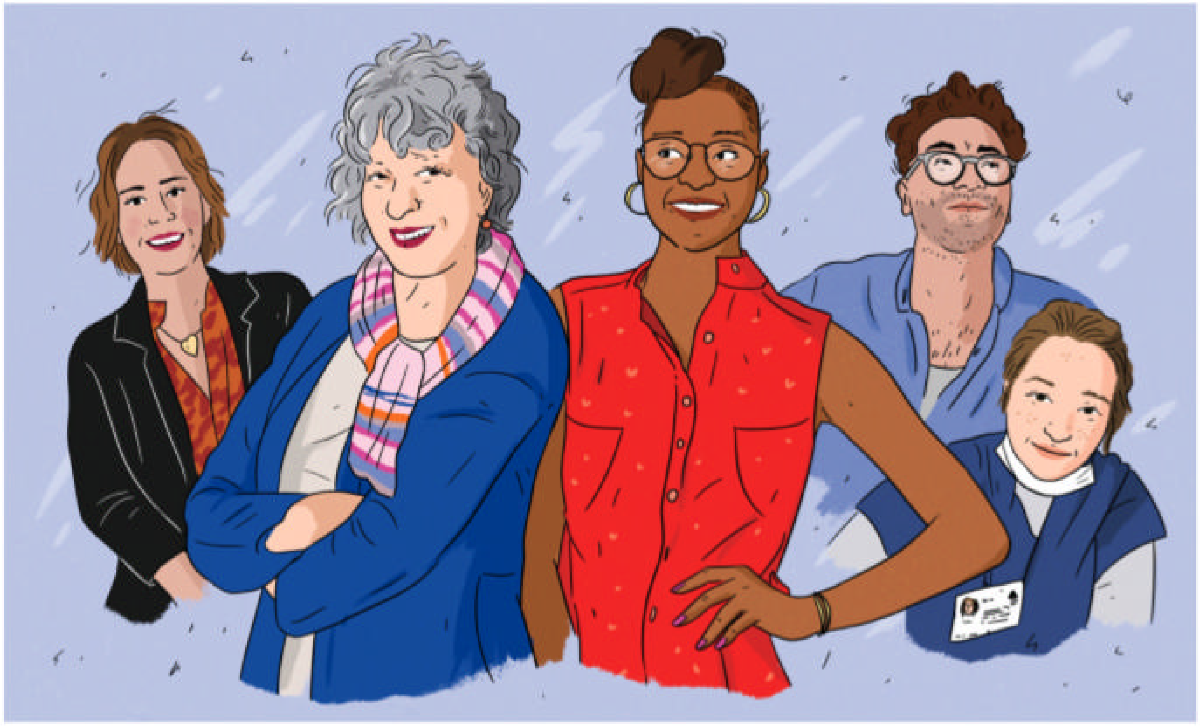

ILLUSTRATION BY LAURA BREILING

"On the census, when it asks for religion, I don't put Jewish. I put the New York *Times!*" So says Miriam Nessler, the first of several frazzled liberals we meet in **"Coastal Elites,"** by the humorist and playwright Paul Rudnick. Originally slated for the Public Theatre this fall, the piece has been reconceived as an HBO special, with five monologues filmed remotely and updated with news of the pandemic and the Black Lives Matter protests. Rudnick applies winking, self-lacerating wit—and a dollop of earned rage—to these portraits of blue America, starting with Miriam, a mouthy Manhattanite with a closetful of tote bags, played with seething panache by Bette Midler. She's joined by Dan Levy, as an actor up for the part of a gay superhero; Issa Rae, as a former classmate of Ivanka Trump; Sarah Paulson, as a mindfulness coach with a conservative family; and, in a surprisingly poignant turn, Kaitlyn Dever, as a Wyoming nurse who comes to New York at the height of the outbreak.—*Michael Schulman* backed by such formidable team players as Sissy Spacek and Richard Jenkins, in the role of Josey's parents, and Michelle Monaghan, who plays her young, despairing colleague. Released in 2005.—*Anthony Lane (Reviewed in our issue of 10/31/05.) (Streaming on Amazon, iTunes, and other services.)*

Pickpocket (Xiao Wu)

From the modest yet precise opening sequence of this drama, from 1997, the Chinese director Jia Zhangke—in his first feature film—displays an incisive mastery of political symbolism. As the title character, Xiao Wu (Wang Hongwei), boards a bus and slips his fingers around a stranger's wallet, he observes a portrait of Mao dangling from the rearview mirror; minutes later, he hears a loudspeaker blare an official call for "self-denunciation." Crime, in Jia's view, starts at the top and spreads through Chinese society with a blankly ordinary enormity, at the price of nothing less than its citizens' souls. Xiao Wu's quietly arrogant marginality contrasts with the government-ratified success of his nouveau-riche brother, Xiao Yong, whose wedding makes the local news. In desperate solitude, the pickpocket pursues a relationship with a call girl (Hao Hongjian), who is practicing her own defiant deceptions. Jia's restrained yet fierce X-ray of the ills of modern China also evokes a calm, intimate compassion for its struggling survivors. In Mandarin.—*R.B. (Streaming at the New York Film Festival, Sept. 25-30.)*

Sun Don't Shine

Amy Seimetz, in her wondrously accomplished and furiously expressive first feature, from 2012, merges the moody rambles of a road movie with the tightly ratcheted criminal tension of a film noir. Her protagonists, Crystal (Kate Lyn Sheil) and Leo (Kentucker Audley), are classic young lovers on the run, driving through rural Florida with a body in the trunk, but violence, fear, and distrust poison their romance from the movie's very start, and things only get worse as they head toward St. Petersburg, where Leo hopes to get help from a former girlfriend (Kit Gwin). Sheil and Audley unleash a harrowing power as their incarnations of blind tenderness and fierce desire build to outbursts of feral rage. Filming her actors with a bracing intimacy and the landscape (her home turf) with a nuanced eye, Seimetz pays meticulous attention to menacing practicalities and to her characters' inner lives; surprising voice-overs and dreamlike, hyper-detailed images send the story into a vortex of subjectivity. The action concludes with one of the great last lines of recent memory.—*R.B. (Streaming on Amazon and the Criterion Channel.)*

Viktoria

The Bulgarian director Maya Vitkova's epoch-spanning family drama, from 2014, about Communism, motherhood, and freedom, ingeniously combines personal life and grand history in a mighty outpouring of wry imagination. It starts in 1979, when a pregnant librarian, Boryana (Irmena Chichikova), refusing to have a child under a dictatorship, attempts a self-induced abortion. When it fails, the baby, named Viktoria, bears the mark: she's born without a belly button. This odd distinction is given a political slant: the country's real-life dictator, Todor Zhivkov (played by Georgi Spasov), envisioning a workforce of women freed from pregnancy, publicly celebrates Viktoria. Granted a chauffeur and a hotline to Zhivkov, she becomes a Communist spoiled brat. Then the Iron Curtain falls, and the balance of family power shifts. Vitkova's spare yet richly textured images steer clear of mere satire, catching the characters in self-revealing gestures of overwhelming intimacy. Women's bodies are at the center of the film, with milk, blood, and even intrauterine images joining political pageantry and protest in a wildly symbolic yet fiercely compassionate vision. In Bulgarian.—*R.B. (Streaming on Vudu, Google Play, and other services.)*

White Hunter Black Heart

Clint Eastwood, in his 1990 film à clef about the making of "The African Queen," exuberantly plays the director John Wilson (a version of John Huston) as a despicable yet alluring Hollywood egomaniac. Lending Wilson a blowhard grandeur and a high-handed manner, Eastwood conjures both the legendary glamour and the destructive self-indulgence of Hollywood's golden age (which, as a young actor, he caught on its way out). The movie is based on a novel by Peter Viertel, one of Huston's screenwriters on the 1951 adventure film, which was largely shot on location in Uganda. Here, he's called Pete Verrill and is played by Jeff Fahey as an unwilling but curious onlooker at the disaster unleashed by Wilson's obsession with elephant hunting at the expense (both financial and moral) of the film. Eastwood's subject is wasted lives and wasted talent; Wilson's charisma and Hollywood's money prove irresistible, and their sheer power brings noteworthy results—amid a needless spiral of ruin. The economy of Eastwood's mournful artistry renders it all the more scathing and derisive.—*R.B. (Streaming on Amazon, Vudu, and other services.)*

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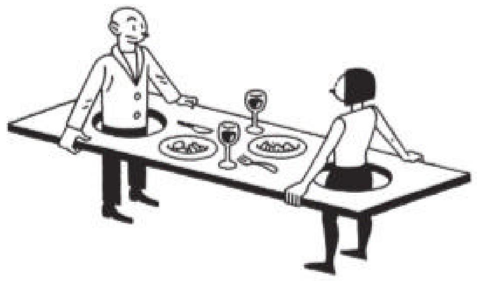
WHAT TO STREAM

COURTESY TURNER CLASSIC MOVIES

At a working-class apartment building in a teeming New York neighborhood, a grim stagehand seethes with rage in jealous suspicion of his wife's infidelity; their daughter, a secretary, is forcibly kissed by her married boss, who offers to make her a kept woman; a woman whose husband left her for another woman is facing eviction and homelessness. Through it all, the neighbors gossip while arguing about politics and venting ethnic prejudices. This agonized tangle of sexual violence, relentless poverty, crude emotions, and stifled dreams is the premise of King Vidor's 1931 drama **"Street Scene,"** adapted from a celebrated play by Elmer Rice. (It screens on TCM on Sept. 28 and is streaming on YouTube.) With the cinematographer George Barnes, Vidor—keeping the stagelike setting outside the apartment building—sends the camera plunging frenetically into the fray and conjures the city's architectural space with deep-focus images. The cast, largely borrowed from Broadway, is deftly flamboyant, but its Hollywood notables—David Landau, as the stagehand; Estelle Taylor, as his wife; and, above all, Sylvia Sidney, as the harassed secretary—are febrile, impulsive, vulnerable, and fiercely determined.—*Richard Brody*



TABLES FOR TWO

FieldTrip
109 Malcolm X Blvd.

The thesis behind FieldTrip, which the chef and restaurateur JJ Johnson opened in Harlem last year, resounds. The phrase "Rice is culture" is plastered everywhere in the small counter-service shop: on the wall, on employees' T-shirts and face masks, on snapback caps for sale. The 2017 cookbook "Between Harlem and Heaven," a collection of "Afro-Asian-American" recipes by Johnson and his former boss Alexander Smalls, includes an essay that argues, "If we traveled the world from Africa to Asia and all the points of the diaspora, we could eat only rice and we would not starve. On the contrary, we would feast." Rice, they note, accounts for more than twenty per cent of the diet of at least 3.5 billion people, and, outside of Asia, West Africans consume more rice than any other population in the world. The West African dish known as jollof rice is so central to the region's culture that there are memes devoted to the debate over whether Ghanaians or Nigerians make it better.

And so jollof is, naturally, the centerpiece of one of FieldTrip's multicultural rice bowls—each featuring a different, carefully sourced variety, scooped with a wooden paddle from an enormous rice cooker and paired with a protein and sundry garnishes. In Johnson's jollof, fragrant, fluffy basmati is dyed red with tomato paste and palm oil and topped with roasted broccoli, cucumber coconut yogurt, and a flaky, paratha-like flatbread that's an homage to the one his grandmother used to make. In another bowl, glossy round grains of nutty Chinese black rice (high in antioxidants and fiber), fried with blistered edamame and nubs of pineapple, are a pedestal for a slim fillet of salmon, blanketed in a zesty piri-piri sauce the color of the ripest mango.

Carolina Gold, named for the golden fibrous strand visible on each raw kernel, gets fried, too, and matched with nuggets of fried chicken breast in a thick barbecue sauce that plays nicely off the seasonal wok vegetables that come in every bowl: on a recent visit, a tangle of slick, slightly smoky chopped collards, cubes of sweet potato, and charred shishitos. The barbecue-brisket bowl, with bits of fatty beef and chipotle black beans strewn across saucy Texas brown rice, made me feel like a cowboy sitting around a campfire.

For dessert, there's a neon-pink version of a Rice Krispie treat—made from house-puffed rice spiked with dragon-fruit juice—and rice-milk soft serve; to drink, there are several varieties of sake, including one that comes in a juice box, and a canned makgeolli, a Korean-style beer brewed from rice. There is even rice in the salad: a spoonful of cold red rice is nestled atop raw spinach with mandarin orange and red onion. (This is the second-best thing to do with leftover rice, if you ask me; the best is to fry it.) Despite this, you could cobble together a meal absent of rice altogether, supplementing sides of meat or fish and vegetables with super-crunchy, salty-sweet fried yucca chips, laced with garlic, ginger, and chili; rangoon-inspired crab pockets, gooey with garlic-herb cream cheese; and sweet plantains glazed in hot honey so that tiny strips of red pepper adhere to their surfaces.

Rice is culture, and rice is comfort. There's no outdoor seating at FieldTrip, and although Central Park and Marcus Garvey Park are both just a few blocks away, I found myself, on a recent visit, too hungry to make it to either. Instead, I raced back to my car, where I slid the driver's seat back as far as it would go and dug into my rice, alternating bites with sips of a frothy virgin piña colada, and found a certain kind of contentment. Around me, the neighborhood surged on. A health aide pushed her elderly charge in a wheelchair. A deliveryman piled packages onto a dolly. Two women shouted at each other from a distance, seeming to argue heatedly until, suddenly, they burst into laughter, and I realized they were friends. *(Dishes $2.50-$13.)*

—*Hannah Goldfield*

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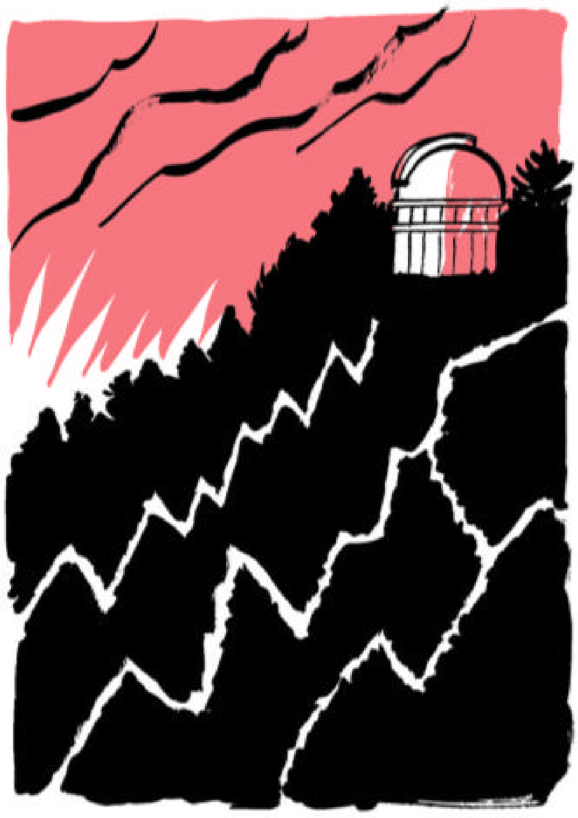
THE TALK OF THE TOWN

COMMENT
IN FLAMES

For more than a century, the Mount Wilson Observatory has looked down on Los Angeles from a peak five thousand seven hundred and fifteen feet above sea level, a height that once lifted it above the city's smog. The clear air allowed Edwin Hubble, in 1924, to discover that what was then called the Andromeda nebula was not a smudge of stars in the Milky Way but a galaxy of its own, and, later, to find proof that the universe was expanding, leading to the formulation of the Hubble constant, which describes its rate of motion. The observatory is a cherished monument and a site of ongoing research and discovery. Last week, though, the sky above it was a sickly orange, as firefighters fought to save it, along with an array of television and communications towers that also sit on Mount Wilson, from the Bobcat Fire. On Friday, they were struggling to hold the flames back with only a few hundred feet to spare.

The Bobcat Fire has raked across more than sixty thousand acres in the San Gabriel Mountains and triggered evacuation warnings for residents of the foothill communities. But it is only one of forty-one major fire complexes causing havoc in California, Oregon, and Washington. More than five million acres have burned. Some thirty people have died, and dozens are missing. Breathing the air of Los Angeles, San Francisco, Portland, and Seattle has been not only unhealthy but, on some days, hazardous. The threat to Mount Wilson is a single scene in that larger disaster, but it encapsulates a moment in which both science and the everyday rhythms of American life seem to be under assault.

Part of the attack is being led by Donald J. Trump. The wildfire crisis is an aspect of the climate crisis: hotter temperatures and changing rainfall patterns have turned swaths of the West into a tinderbox. But last Monday, in California, Trump told people to trust him that it will "start getting cooler," and added, "I don't think science knows, actually." He used the trip to bestow the Distinguished Flying Cross on two military-helicopter crews that had been deployed to fight the Creek Fire, which had scorched a quarter of a million acres in Fresno, Madera, and Mariposa Counties and, at the end of last week, was still mostly uncontained. The crew members deserve the honor—they risked their lives to save more than two hundred people trapped by the fire—but the event was also a reminder of how, for Trump, pomp serves as a substitute for policy. Of course, the policies he does pursue, such as renouncing the Paris climate accord, do real harm. (The contrast between Trump and Joe Biden, who spoke about the California fires on the same day, but with reason and urgency, was stark.) The question is whether, in November, Trump and the Republican Party, which has long blocked action on the climate, will be held to account.



The signals are mixed. Polls show that addressing the climate crisis remains a partisan issue. That is a tragedy, particularly since Americans no longer have to guess whether climate change will affect them: they can see it in the tracts of burnt-out homes and in the smoke rising in the West, which, last week, drifted far enough to turn skies in New England hazy. They can register it in the length of time that Hurricane Sally lolled in the Gulf of Mexico before inundating Pensacola and other communities, while, at one point, four other named storms spun alongside it. Last Friday, with more than two months to go in the storm season, the National Hurricane Center used up the last name (Wilfred) on its alphabetized list. Greek letters come next, and Subtropical Storm Alpha was identified by early afternoon; Beta followed within hours. Now every year may be another 2020, in terms of a pileup of calamities.

The Economist, in a survey of the climate factors contributing to the wildfires, concluded that "people on America's west coast will have to learn to coëxist with more, and more frequent, fires." Or

ILLUSTRATIONS BY JOÃO FAZENDA

they can move, and, indeed, many may be forced to do so. According to a joint project by ProPublica and the *Times*, if emissions are not cut drastically by mid-century—and, to an extent, even if they are—for an increasing number of days each year, some heavily populated areas of the country will be too hot or too humid, or both, for residents to venture safely outdoors. These include parts of Texas and Arizona, but also of North Carolina, Missouri, and Illinois.

Meanwhile, cities and towns on the Eastern Seaboard and the Gulf Coast will confront rising sea levels that may make living in all but the wealthiest places miserable or unsustainable. Eventually, not even government-backed flood-insurance programs will be enough to keep people on land that is being lost to the sea. Farm communities will face a reckoning as well, with many crop yields projected to fall. As for the wildfires, models show them consuming ground not only in the West but in such disparate states as Florida and Minnesota. Climate migrants will not only be leaving homes in the Global South; they will include Americans crisscrossing the country.

In short, the climate crisis is, at last, poised to change the map of American politics, because it will change the map of America. Comparisons have been drawn to the Great Migration, when, from the nineteen-twenties to the nineteen-sixties, more than six million Black Americans settled in Northern states, a shift that reshaped urban politics and culture and gave support to the civil-rights movement. But that analogy is inadequate. Projections about the demographics of various states may be upended in ways that are impossible to predict. People forced out of their homes in a red state, or a blue one, will not necessarily become green voters. Mass dislocation might lead to an environmentalist awakening, or even mobilize Americans to confront issues of inequality, but it could also contribute to a politics of resentment. One can too easily imagine a future demagogue—Trump may not be the last—exploiting domestic climate migrants' sense of betrayal and fear.

Yet the polls show, too, that voters who do care about the climate, including a majority of younger people, tend to be passionate about the issue. They have the potential to be an ever more powerful electoral force. As with the battle to save the Mount Wilson Observatory, the climate crisis involves choices about what we value. Politics and leadership, not to mention science, will matter, perhaps as never before, because of how very wrong things could go in the next decades, and how much upheaval there is likely to be. As Edwin Hubble might have observed, everything is in motion. There are few constants left.

—*Amy Davidson Sorkin*

OVER THEIR HEADS DEPT.

A KENNEDY WHISTLE-BLOWER

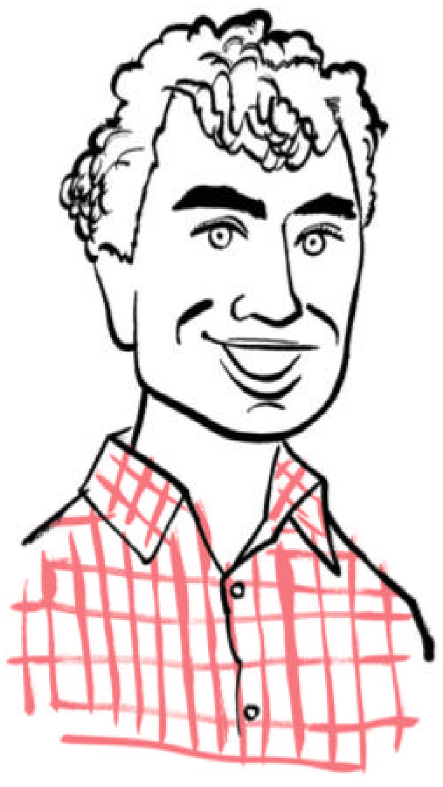
Months before Bob Woodward's book "Rage" documented President Trump's efforts to deceive Americans about the peril posed by COVID-19, Robert F. Kennedy's twenty-six-year-old grandson tried to blow the whistle on the President's malfeasance from an improbable perch—inside Trump's coronavirus task force.

In April, Max Kennedy, Jr., despite having signed a nondisclosure agreement, sent an anonymous complaint to Congress detailing dangerous incompetence in the Administration's response to the pandemic. On the phone recently from Hyannis Port, Massachusetts, Kennedy explained why he'd alerted Congress. "I just couldn't sleep," he said. "I was so distressed and disturbed by what I'd seen."

How did a Kennedy end up in a sensitive role in the Trump Administration? After graduating from Harvard, in 2016, Kennedy did some time at consulting and investment firms; he planned to take the LSAT in March, but the pandemic cancelled it. At loose ends, he responded to a friend's suggestion that he join a volunteer task force that Jared Kushner was forming, to get vital personal protective equipment, such as masks, to virus hot spots. Kushner, he was told, was looking for young generalists who could work long hours for no pay. "I was torn, to some extent," Kennedy, a lifelong Democrat, said. "But it was such an unprecedented time. It didn't seem political—it seemed larger than the Administration." And he knew people who'd been sick. So in March he volunteered for the White House COVID-19 Supply-Chain Task Force, and drove to Washington.

On his first day, he showed up at the headquarters of the Federal Emergency Management Agency and joined around a dozen other volunteers, all in their twenties, mostly from the finance sector and with no expertise in procurement or medical issues. He was surprised to learn that they weren't to be auxiliaries supporting the government's procurement team. "We *were* the team," he said. "We were the entire frontline team for the federal government." The volunteers were tasked with finding desperately needed medical supplies using only their personal laptops and private e-mail accounts.

As the days passed, and the death count climbed, Kennedy was alarmed at the way the President was downplaying the crisis. "I knew from that room that he was saying things that just weren't true," he said. Trump told the public that the government was doing all it could, but the P.P.E. emergency was being managed by a handful of amateurs. "It was the number of people who show up to an after-school event, not to run the greatest crisis in a hundred years," Kennedy said. "It was such a mismatch of personnel. It was one of the largest mobilization problems ever. It was so



Max Kennedy, Jr.

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Cadence
Campbell Soup
Capital One
Cardinal Health
CarMax
Carnival
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CenterPoint
CenturyLink
Cerner
CF Industries
Charles Schwab
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Digital Realty
Discover
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Dollar General
Dollar Tree
Dominion Energy
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Federal Realty
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unbelievably colossal and gargantuan. The fact that they didn't want to get any more people was so upsetting."

Kennedy believes that the Administration relied on volunteers in order to sidestep government experts and thereby "control the narrative." He said that Brad Smith, one of the political appointees who directed the task force, pressured him to create a model fudging the projected number of fatalities; Smith wanted the model to predict a high of a hundred thousand U.S. deaths, claiming that the experts' models were "too severe." Kennedy said that he told Smith, "I don't know the first thing about disease modelling," and declined the assignment. (A spokesman said that Smith did not recall the conversation.) To date, nearly two hundred thousand Americans have died.

The volunteers were also instructed to prioritize requests from the President's friends and supporters. According to Kennedy, the group paid special attention to Jeanine Pirro, the Fox News personality. Pirro, Kennedy said, was "particularly aggressive," and demanded that masks be shipped to a hospital she favored. The volunteers were also told to direct millions of dollars' worth of supplies to only five preselected distributors. Kennedy was asked to draft a justification for this decision, but refused. "Hundreds of people were sending e-mails every day offering P.P.E.," he said, but no one in charge responded effectively. "We were super frustrated we couldn't get the government to do more."

In the end, the task force failed to procure enough equipment, leaving medical workers, including Kennedy's cousin, to improvise by wearing garbage bags and makeshift or pre-worn masks. States were left to fend for themselves, bidding against one another for scarce supplies. Kennedy was disgusted to see that the political appointees who supervised him were hailing Trump as "a marketing genius," because, Kennedy said they'd told him, "he personally came up with the strategy of blaming the states." The response was in line with what Kennedy calls the White House mantra: that government doesn't work, and "that the worst thing we could do was step on the toes of the private sector."

Kushner came by the FEMA office a few times, once to ask the flailing volunteers what three things they most needed, and promising fixes by the end of the day. He had "an air of self-importance," Kennedy recalled. "But I never saw a single thing that Kushner promised change." After two or three weeks of growing distress, Kennedy wrote his complaint, addressing it to the House Oversight Committee, hoping that Congress would step in. Meanwhile, the task force stopped meeting in person, because a member tested positive for COVID-19. In April, Kennedy quit, and he has since gone to work on the Democrats' 2020 election efforts. He decided to defy the N.D.A., which he does not think can legally stifle him from expressing his opinion, and he is featured in a new documentary, "Totally Under Control," from the director Alex Gibney. Kennedy said, "If you see something that might be illegal, and cause thousands of civilian lives to be lost, a person has to speak out." The Administration's coronavirus response, he said, "was like a family office meets organized crime, melded with 'Lord of the Flies.' It was a government of chaos."

—*Jane Mayer*

BACK TO THE LAND DEPT.
HOME ON THE RANGE

The Australian actor Travis Fimmel, formerly known as Ragnar Lothbrok, eighth-century Viking slaughterer-hero, on the History Channel series "Vikings," can, as of this month, be found navigating the virgin planet Kepler-22B, on HBO Max. In the new Ridley Scott-produced series, "Raised by Wolves," Fimmel plays Marcus, a burly, bearded guy with a mullet, a knightly white surcoat, and a dark past, living among androids and animosity. Despite this, he retains a mellow vibe; so does Fimmel. On a recent Saturday, he was relaxing at his cattle ranch, north of Los Angeles. He wore a plaid shirt and a baseball cap; his beard was shaggy. "I've been busy doing a lot of fencing"—i.e., putting up fences—"while I've got this time off because of COVID, and planting a lot of trees," he said. "Fruitless mulberry, because they're great shade trees. Peppercorn, because they're so drought-tolerant. Eucalyptus, because I'm trying to make everything as Australian as I can." He hasn't minded the time off. "I'd much rather be doing this sort of stuff than putting on makeup and playing make-believe," he said.

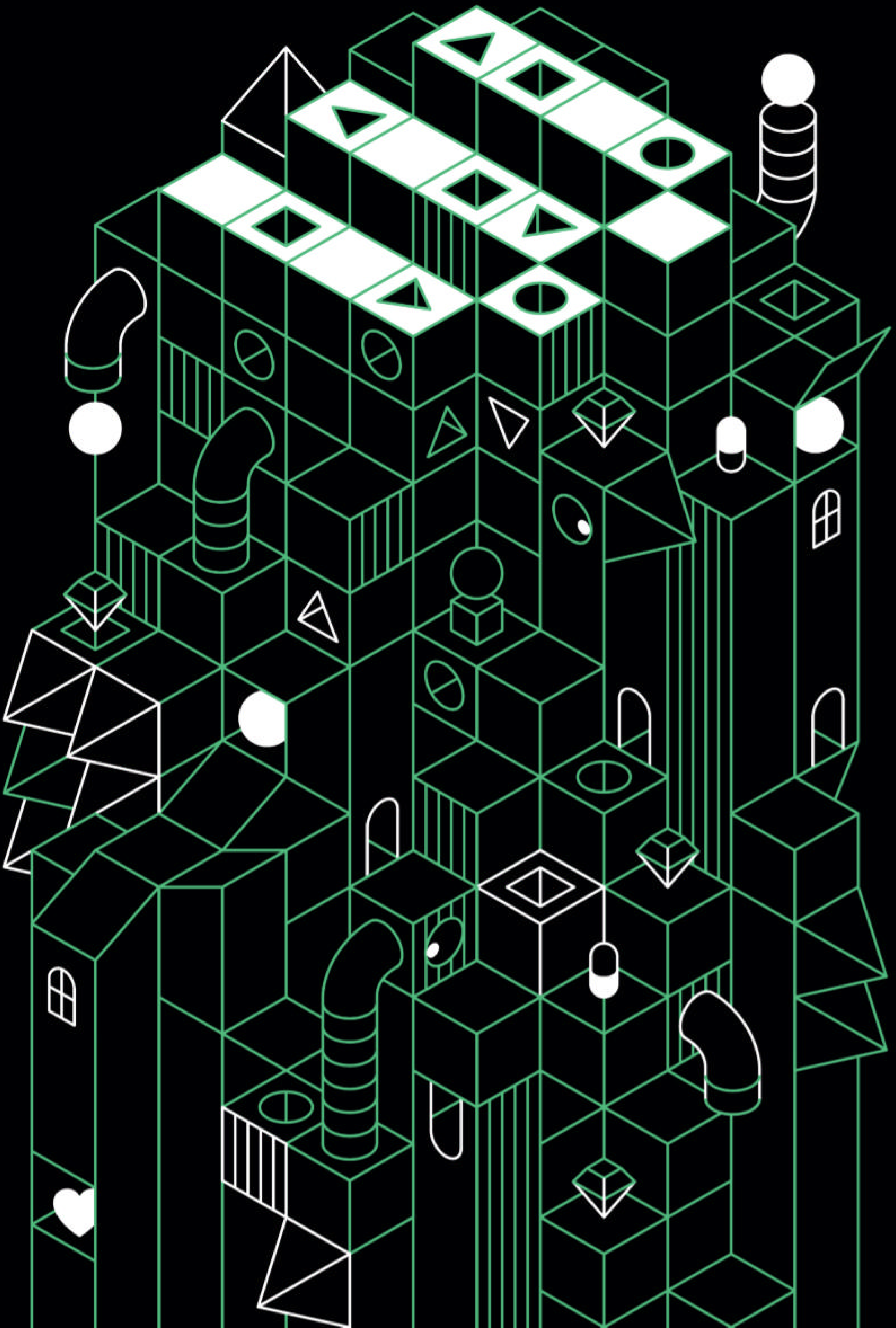
Fimmel, forty-one, grew up in southeastern Australia, on his family's farm. "We had dairy cattle, beef, and crops," he said. He'd planned to farm "always," but "then there was a year in my life, when I was eighteen, where I was, like, I don't want to be on the farm." (Ragnar Lothbrok had a similar impulse.) He ventured to London and L.A., bartending ("Working in bars, living above bars—it was kind of the funnest time"); modelling Calvin Klein underwear, on a traffic-stopping billboard in London ("His presence was jaw-dropping," Klein has said); and acting. "I had no ambition to do it," Fimmel said. "I still don't." Performing live makes him uncomfortable. "I cannot audition to save my life," he said. "I hate it. I could never be in a play, onstage. I'd break down and cry."

Onscreen, he makes do. He's played Tarzan, in the series "Tarzan"; Sir Anduin Lothar, knight champion of Azeroth, in the video-game-inspired "Warcraft"; and Ragnar, who is both assertive and sensitive—his best friend is a monk he captured. Fimmel's performance in "Vikings" caught the eye of Daniel Day-Lewis, whose wife, the director Rebecca Miller, cast Fimmel in her 2015 film, "Maggie's Plan." In it, he plays an earnest Brooklyn pickle-maker in a knit hat, opposite Greta Gerwig and Ethan Hawke. He brings to all his roles a startling lack of neurosis. On "Raised by Wolves," the aesthetic is a little "Blade Runner," a little "Westworld," a little White House Christmas decorations, and people act accordingly—but, whenever Fimmel appears, the series enters a realm of recognizable human behavior, even amid dialogue like "The necromancer took him."

"It's the same as any sort of period," Fimmel said, of life in the year 2159 on Kepler-22B. "It's just all about relationships. People trying to get loved or find their place in the world." In Marcus's first scene, he defuses tension between his clan, the Mithraic, who have come to the new planet after killing Earth's atheists, and Mother, an atheist android, whose human children came to the planet

COMING OCTOBER

WIRED GAMES



as embryos. “Wait. Please. Apologies,” Marcus begins, warmly. He’s picked up a stalk. “I see that you have been farming. A lot.” Soon, he’s at her table, slurping soup. Later, among solemn Mithraic children in a spaceship, he initiates a galumphing round of duck-duck-goose.

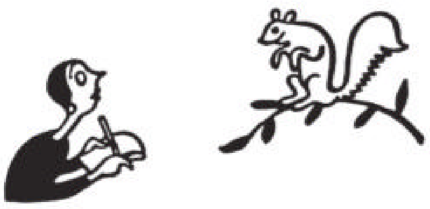
On his ranch, Fimmel said, “I’ve got a few longhorn cattle, horses, chickens, an Englishman who’s staying here—he’s up there, walking around.” He waved. “I’ve got a couple of emus, just because they’re Australian. They’re not the sharpest bird in the aviary. But they’re always intrigued by whatever’s going on. They’re quirky, and they can run like thirty-five miles an hour.” He headed toward a fence; two emus stood atop a hill. “Come on, hey!” he yelled, whistling. The emus snapped to attention and raced over, bobbing at speed. They cocked their fuzzy heads at him, then ate from his hand. “Look at their feet—they’re like dinosaurs,” he said. Two brown horses approached, and he fed them, too.

Fimmel rides horses onscreen and off. In “Vikings,” Ragnar executed a daring escape on a white one; while shooting “Warcraft,” Fimmel was thrown from a spooked horse; he also has up-in-the-air plans to play Wyatt Earp and to star in a spaghetti Western. Beyond that, professionally, “I’m meant to go back to do a second season of, um, spaceships,” he said. Meanwhile: the ranch. “I wanted to get kangaroos,” he said. They’re illegal to keep as pets in California, but about this, too, he is serene. “If someone were to let one free around me, I’d rescue it,” he said.

—*Sarah Larson*

OPEN ROAD DEPT.

PRETTY RESILIENT



Brynlee and Cougan Smith concede that roadschooling can be tough. A virtual classroom on the open road is not for crybabies. “You should always have a good attitude, even when it’s, like, really hard and you keep, like, losing your connection when you turn in your math test, and then you have to redo the entire test,” Brynlee, who was relaxing at a campground near San Antonio, and who is nine years old, said the other day. Cougan, her brother, who is eleven, said that, above all, a roadschooler needs to be mature: “You should just think like you’re at home and not get distracted by the things out the window and not, like, show all your classmates a picture you took of a red fox.”

Roadschooling is a lot like remote schooling, except that students log on to classes not from their kitchens but from, say, the Great Smoky Mountains or the Petrified Forest. The strange school year has made this an attractive option. Mayor Bill de Blasio, after delaying most in-person classes for another week, predicted that working-class families wouldn’t mind the chaos. (“They are people who understand the realities of life,” he said.) Nevertheless, families are seeking alternatives, and some of them are hitting the road. R.V. dealers have months-long waiting lists. Campsites are offering after-school programming. CampSpot, a campground-reservation company, has designed itineraries, with stops meant to supplement history or science lessons. (“Parents may think, I’m going to screw up my kids’ education!” Caleb Hartung, CampSpot’s C.E.O., who was homeschooled, says. “But kids are pretty resilient.”)

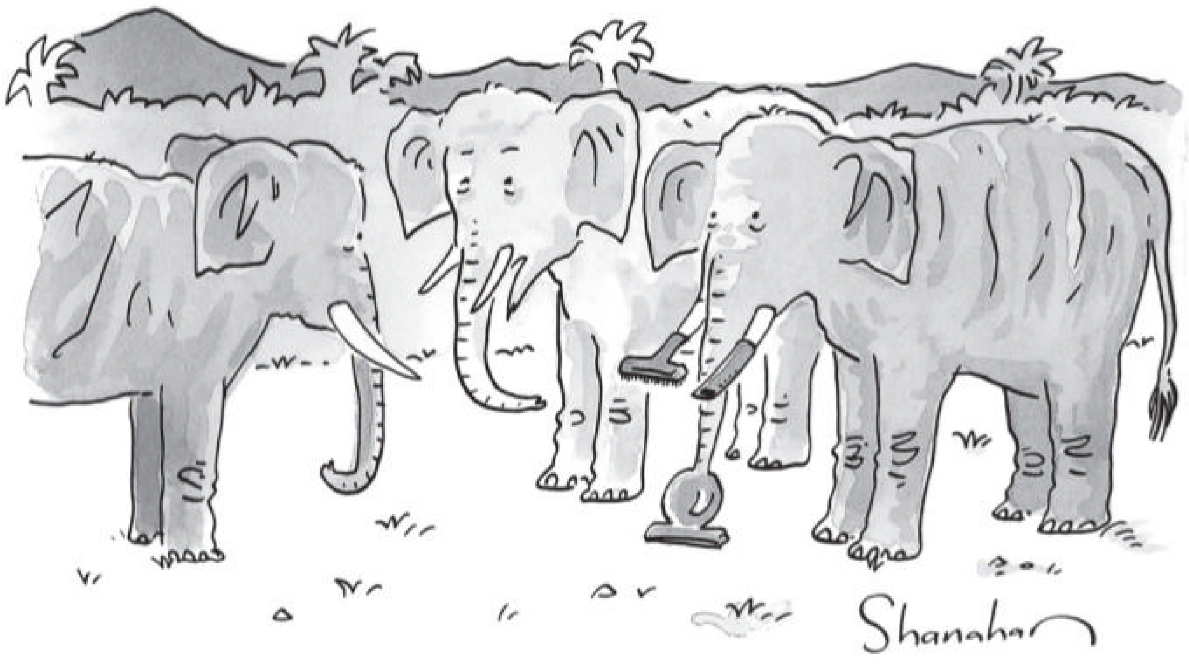
This summer, Brynlee and Cougan’s parents sold their house, in Prescott, Arizona. Now the kids live in a thirty-six-foot-long R.V., along with a two-year-old sister, Della; two dogs, Cookie and Clyde; their dad, Ryan (an adventure guide); and their mom, Mattie (ditto, with a master’s in education). Mattie runs the family’s Instagram. If Brynlee and Cougan had Instagram accounts, their posts would show them studying outside the camper while, in the background, geysers erupt. But reality is less cool; the kids usually do class from the back seat of their family’s pickup truck as it tows the R.V. down the highway.

One morning, when no driving was required, classes were held outside. Cougan sat at a fishing pond wearing a muscle tee, his hair in a Mohawk. He had his laptop open and a line in the water. “It’s harder to do math in the truck, because you have to get out way more papers,” he said. “And when you have to do, like, science experiments—you can’t do those. Because you’re in a truck. You can’t drop stuff and record which lands first, because there’s probably gonna be something moving in the truck, like Della or the dogs.”

“Or me!” Brynlee said. She sat at a picnic table, waiting for her language-arts class to begin. A recent assignment was to write a diary from the perspective of a kid on the Lewis and Clark expedition. (First entry: “I didn’t really want to go but I needed to listen to my father.”) But the Internet wasn’t working. This is normal. Videoconferences fuzz out. The audio goes squirrelly. “It sounds like a robot chipmunk,” Brynlee said.

“Still waiting on Brynlee to tell me where she’s camping,” her teacher, at a public school back in Prescott, said brightly, when the service coöperated.

“Um, last night we went and saw the Alamo,” Brynlee said. They couldn’t go



“And this is Dyson.”

inside because of COVID. "But we did, like, a river walk down by there."

"Super exciting!" the teacher said.

Brynlee likes roadschooling—she's visited Mt. Rushmore and Yellowstone and gone kayaking and rock climbing—but if she were President, she said, classes would still be in person; everyone would wear masks and workers would be paid fairly. (Cougan's plan involved targeted reopenings: "Only a certain amount of fun things, like laser tag or paintball or pools and playgrounds.") The Smiths stuck with their local schools so that they could return if they chose to.

It was time to switch classes. "When do you need to get back on, hon?" Mattie asked Cougan.

"Six minutes ago," he said. She herded him into the camper for a lesson on multiplying fractions. But Google Meet was frozen. "It's just saying you're loading forever!" he said. "You're sitting on a computer all day. You're gonna melt your brain before you learn anything."

That evening, they settled down to do some art. Cougan was painting a rock and venting. "Like, it just kicked me off!" he said. "It said, 'Can't join this video meeting,' 'Page is unresponsive.' Like, everything that could possibly go wrong."

Brynlee was decorating a stick. "Yeah, but at least you caught a fish this morning," she said.

"Oh, yeah," Cougan said. "I did!"

—*Zach Helfand*

KEEPING THE FAITH DEPT.
WALKABOUT

Calamity can lead to clarity. According to the Pew Research Center, nearly half of Americans who attend religious services at least once a month report that the coronavirus pandemic has bolstered their faith. In May, President Trump encouraged houses of worship to reopen. (He was miffed that governors seemed to be giving preferential treatment to "liquor stores and abortion clinics.") But the setting—indoors, lots of singing—presents a challenge. Clergy are left to minimize the risks. At the Village Temple, on Twelfth Street, the doors remain, for the most part, closed. Its new rabbi, Diana Fersko, must lead the congregants, remotely, through catastrophe, and she must also figure out how to meet them. (Like medical residents, new rabbis start work on July 1st.) In her first sermon, delivered over Zoom, Fersko recited some lines from the Torah about God seeing Adam in the Garden of Eden and concluding, "It is not good for man to be alone."

"An emotional switch went off, and I knew I needed to be aggressive," Fersko said. She conceived of a neighborhood amble, the Shabbat Walk, with stops on stoops and in lobbies, to get to know her flock. On a recent Saturday, Fersko, wearing a tallis and a leopard-print mask, hit the streets. She squinted at a list of addresses. "There's a temple member who was actually born during the Spanish flu of 1918. Can you imagine? Kind woman and a great Jew." On lower Fifth Avenue, Mimi Abrams stepped out from under an awning and waved. "Our first stop," Fersko said.

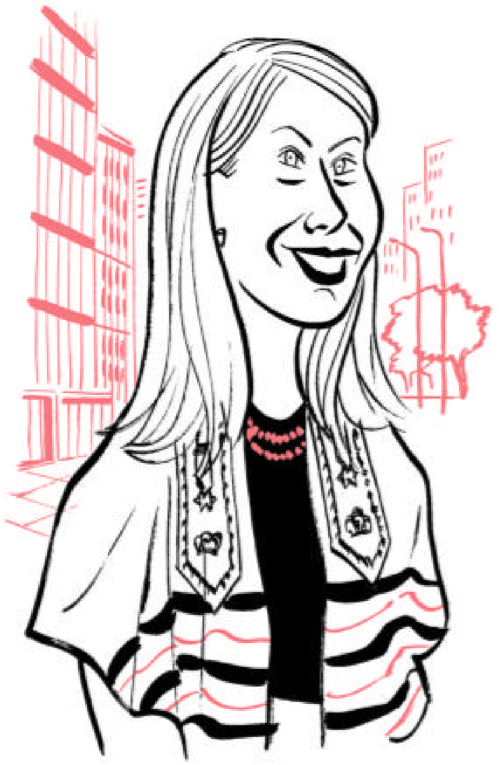
"I wish I could give you a hug," Abrams said. "Your last two sermons have blown us away."

"It's tough on Zoom," Fersko said. "Normally, in a room, you feel the vibe." Abrams brought her hands up to either side of her mask and mimed a smile. "Can we take a selfie together?" she asked.

A few blocks south, Fersko counselled a congregant who had so far resisted Zoom services. Jerry Arbittier, who had neatly parted gray hair, sat in an armchair in his lobby. His family has belonged to the temple since 1964, but for a brief interlude with a charismatic rabbi uptown. "I go to services to relax, to get away," he said. "It's like a meditation. Sitting in front of a computer screen, when I've already been in front of one all day, doesn't really do it."

Fersko asked whether he'd attend a service en plein air. "Maybe," he said. She eyed a leafy atrium through the lobby. Later, on the street: "Nice outdoor space. I have to wonder, is that the scene of a future minyan?" As she headed west, a woman with a couple of shopping bags sized her up: "Shabbat shalom!"

"Good Shabbos!" Fersko replied. "It's so delightful to see people out and about, but it also drives home the sadness." Many congregants have lost loved ones. "As a rabbi, I'm around a lot of illness and death," Fersko said.



Rabbi Diana Fersko

As she made her way into Chelsea, the tallis came off. "I'm shvitzing," she said. Across the street, a woman wearing a subway-map-patterned mask beckoned. "O.K., we're jaywalking."

Emily Hacker and Anne Keating stood under a tree. They had spent the bulk of lockdown with their daughter, Olivia, who recently returned to her home in Philadelphia. "She took the Amtrak," Hacker said. "It worried me. She texted, 'I wiped the seat, I washed my hands.' But still . . ."

"We'd love for you to meet her on FaceTime," Keating said. Hacker held up her cell phone to Fersko.

At her last stop, Fersko and a family of five fanned out in a parking space. The kids' school years had been cut short in the spring. The two eldest, Rachel and Marc, are stage managers in the technical-theatre program at LaGuardia High School. "We were actually in rehearsal when the order came down to close theatres seating more than five hundred," Rachel said. "So that was super sad."

It began to rain, and the group shuffled into their building. The kids' mother gestured at the lobby's seating area, which had been sealed off with caution tape, like a crime scene. "We have a lot of people who would come down and spend the whole day sitting and socializing," she said. Fersko nodded. For now, they stood.

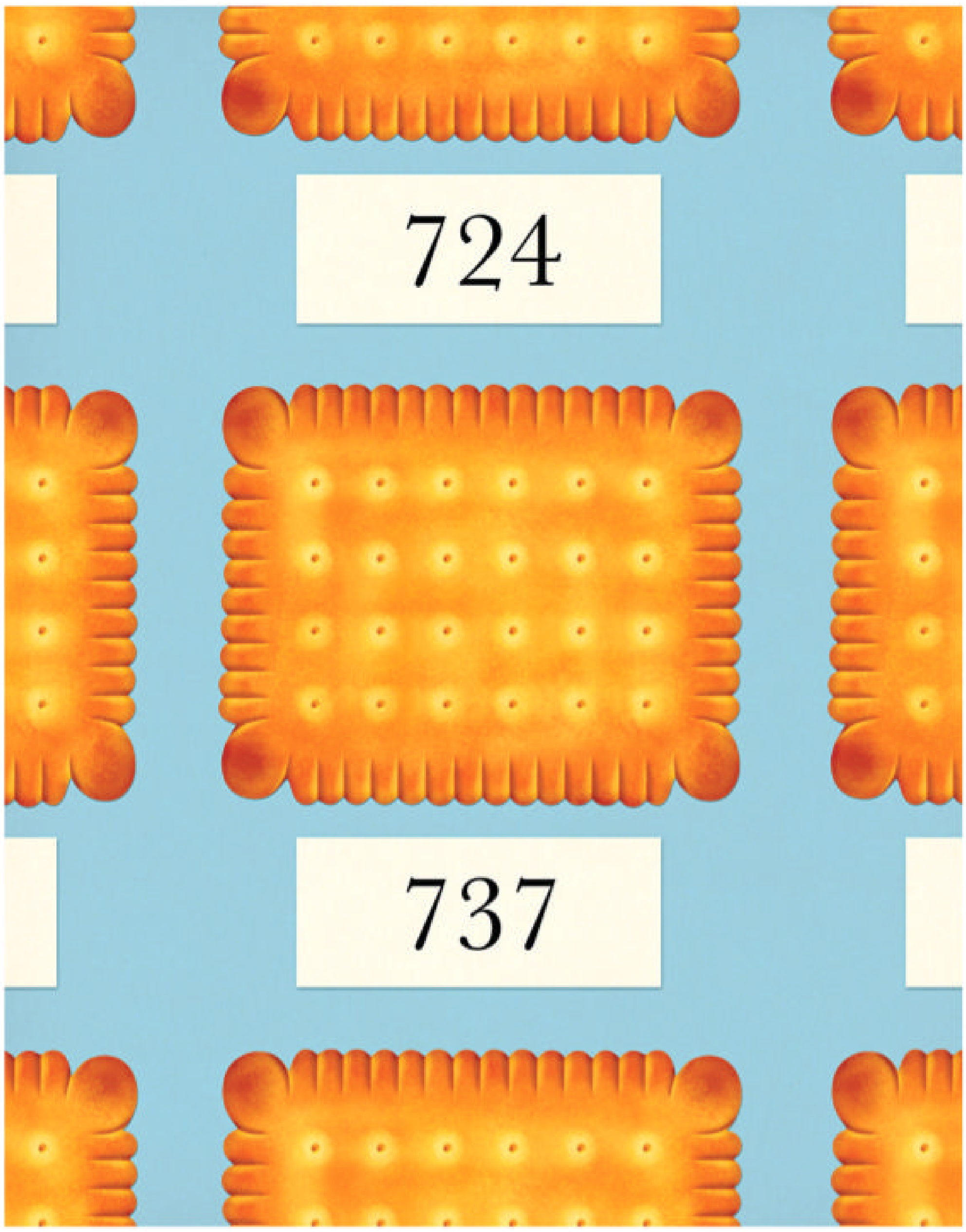
—*Micah Hauser*

DEPT. OF NUTRITION

HOW SWEET IT IS

If we could design a better sugar, would we eat less of it?

BY NICOLA TWILLEY



New food-industry research focusses on reformatting sucrose or using rare sugars.

Every workday, at ten o'clock, at noon, and at three in the afternoon, Eran Baniel receives an alert on his phone: the call to taste. When I joined him on a Monday morning in January, in an office park a few miles east of Tel Aviv, he was sitting at a desk with two white china plates of Petit Beurre cookies in front of him. The cookies looked identical, but a label identified the plate on Baniel's left as 792, and the one on his right as 431. "Petit Beurre is our preferred platform," Baniel told me, breaking off a corner of a 792 cookie and crunching it thoughtfully. "It's fast to make and fast to taste." He sipped some water, took a leftover shard of 431, and invited me to join him as he repeated the process. The second cookie tasted better somehow—a little more buttery, maybe—but that was not what Baniel was assessing. The two sets of cookies had been made with the same recipe, except that one batch contained forty per cent less sugar. The question that Baniel had to answer was: which?

Baniel, a former actor now in his mid-seventies, has expressive eyebrows and a theatrical baritone. In 2014, he became the founding C.E.O. of DouxMatok, an Israeli startup that is now releasing its first product: sugar crystals that have been redesigned to taste sweeter, so that you can put forty per cent fewer of them in a Petit Beurre and it will still taste as sweet as the original. The company has branded its sugar Incredo, a name that gestures toward the disbelief that greets any suggestion that we might be able to have our cake while eating only half the sugar, too.

At the company's headquarters, every available surface seemed to be laden with Incredo-sweetened treats—cookies, chocolates, gummy bears, jars of cocoa-hazelnut paste. In blind tastings conducted by a consumer-research company, more than two-thirds of a panel of ordinary consumers said they preferred the Incredo Petit Beurres to the full-sugar ones, and seventy-four per cent indicated that they'd rather buy the Incredo version of Nutella than the real thing. It won't be long before they can: later this year, Incredo will enter commercial production with Südzucker, Europe's biggest sugar producer, as well as with one of the leading refined-sugar distributors in North America, whose identity, I was told, had to remain undisclosed.

Such secrecy is unsurprising in an industry dominated by multinational corporations all spending large amounts on research and development in pursuit of the same goal: to continue selling countless sweet things in a world that is increasingly wary of sugar. In 2015, the World Health Organization recommended that no more than ten per cent—and, ideally, less than five—of an adult's daily energy intake should come from sugar. In other words, an average adult, with a daily consumption of two thousand calories, ought to consume no more than six teaspoons of sugar a day—the amount found in a generous schmear of Nutella, and quite a bit less than the contents of a can of Coke. The following year, the Obama Administration announced new rules requiring companies to disclose their products' added-sugar content on the Nutrition Facts label. Some governments have gone further. Many countries, especially in Europe and South America, have begun placing health-warning labels on, and taxing, products containing more than a teaspoon or two of sugar per three ounces—a category that includes many things that people think of as innocuous, such as breakfast cookies, oatmeal muffins, and nutrition bars.

These measures seem to be having an impact. Recent surveys report that sev-

ILLUSTRATION BY NA KIM

enty per cent of Americans are concerned about the sugar in their diets, and U.K. shoppers rate sugar content as the most important factor in making healthy food choices. As public opinion turns against sugar, food companies have outdone one another in pledges to cut the quantities of it that appear in their products. Pepsi has promised that by 2025 at least two-thirds of its drinks will contain a hundred calories or fewer from added sweeteners. A consortium of candy companies, including Mars Wrigley, Ferrero, and Russell Stover, recently declared that by 2022 half of their single-serving products will contain at most two hundred calories per pack. Nestlé has resolved to use five per cent less added sugar by the end of this year—though, as of January, it still had more than twenty thousand tons of the stuff left to eliminate.

The problem is that sugar isn't easy to replace. Despite scientists' best efforts in the past century, none of the artificial alternatives that have been developed are quite as irresistible, let alone as versatile in the kitchen. The looming impact of new nutrition standards, combined with regulatory pressure and public sentiment, has led to something of a panic in the industry, and a flurry of innovation. The new race—in which DouxMatok is only one of several competitors—is not to develop a substitute for sugar but to design a better sugar altogether.

DouxMatok's method of restructuring sugar crystals was invented by Baniel's father, Avraham, an industrial chemist. He patented the technique five years ago, when he was ninety-six; today, at the age of a hundred and one, he has finally retired. At one point during my visit, Eran sifted through a pile of his father's memorabilia—black-and-white photographs, identification cards, university certificates—to find illustrations for a forthcoming presentation about the company. Many of the photographs were new to Eran, and, as he tried to place them, the outline of his father's life emerged: a six-year-old Polish boy sent to boarding school in what was then the British Palestine Mandate; a student at the University of Montpellier; a promising young scientist, strikingly handsome, exempted from serving in the British Army's Palestine Regiment so that he could make bombs in the basement of a paint factory near Haifa.

After the war, Avraham helped found the newly formed State of Israel's national mining institute. In the following decades, he was granted more than two hundred patents, for processes that ranged from turning wood chips into biofuel to synthesizing a key ingredient in carpet fibres. "The first chemical technology sold abroad by Israel was from my father," Eran told me—a method for producing potassium nitrate that was licensed to Japanese fertilizer manufacturers in the nineteen-fifties.

Avraham began thinking about sugar in the late nineties, while he was serving as a consultant to a British food company that was launching a new artificial sweetener in the United States. Early sales had been slow, and consumer research seemed to show that children, in particular, remained resolute in preferring real sugar. Avraham was reminded of something he'd noticed back in the nineteen-forties, when sugar was strictly rationed. His neighbor, an elementary-school teacher, had asked him whether, as a chemist, he might be able to get hold of some cornstarch so that she could make a pudding. Her theory was that its thick and sticky texture would coat the tongue, helping her students' meagre allowance of sugar seem more satisfying.

After helping his neighbor, Avraham made some pudding himself, and found that she was right: up to a point, the more viscous he made it the sweeter it tasted. Sixty years later, he began to wonder whether the best way of reducing sugar was not by replacing it but by reformatting it. Sucrose is delivered to the taste receptors on our tongues by saliva, as sugar crystals dissolve in our mouth, but only about a fifth of the sugar in a typical bite of cookie actually connects with a receptor. The rest of it is washed down into our bellies—calories we consume but never taste. "Statistically, it goes everywhere you don't want," Eran told me.

Searching for a way to tickle the sweet receptors more effectively, Avraham tried blending pure sucrose with various carriers. Eventually, he hit on the idea of mixing sugar with tiny grains of silica, a common ingredient in the food industry. (Silica passes through the human digestive system without being metabolized.) Each silica grain is less than a fiftieth the diameter of human hair—invisible to the eye and undetectable on the tongue. DouxMatok's production process embeds them throughout each sugar crystal, like blueberries in a muffin.

Even though the resulting crystal is ninety-nine per cent sugar, the addition of silica has two outsized effects: the bond between the silica and the sugar comes apart in the mouth, exposing a vastly expanded surface area of sucrose to the liquefying powers of saliva; and the sucrose immediately surrounding each silica grain changes form. The atoms in a sucrose molecule are usually stacked in a well-ordered lattice, but when this structure becomes what scientists call "amorphous," its atoms frozen in random chaos, it dissolves on the tongue much more quickly. Incredo's exponentially more soluble structure rapidly saturates your taste buds, delivering an intense hit of sweetness. The best analogy is cotton candy: melting sugar into an amorphous state and spinning it into a tangle of fine strands produces a confection that seems much more cloying than chocolate or soda, despite containing a fraction of the sugar.

Once Avraham had a prototype, he enlisted Eran, who is an entrepreneur rather than a scientist. (He started out in show business, producing theatre collaborations between Israelis and Palestinians, and then moved on to urban lighting projects, including illuminating the walls of the old city of Jerusalem.) They secured patents on the technology, consulted with venture capitalists and major food companies, and, in 2014, founded DouxMatok. The name means "double sweet"—or, at least, it does if you know that *matok* means "sweet" in Hebrew and that *doux*, the French for "sweet," sounds like the Hebrew *du*, which means "double."

Until the late eighteenth century, when sugar production started to become mechanized, most people consumed very little of what nutritionists call "free" or "added" sugars—sweeteners other than, say, the lactose naturally present in milk and the fructose naturally present in fruit. In 1800, an average American would have lived and died never having encountered a single manufactured candy, let alone the array of sugar-sweetened yogurts, snacks, sauces, dressings, cereals, and drinks that now line supermarket shelves. Today, that average American ingests more than nineteen teaspoons of added sugar every day. Not only does most of that never come into contact with our taste buds; our sweet receptors are also less effective than those for other tastes. Our tongues can detect bitterness at concentrations as low as a few parts per million, but, for a glass of water to taste sweet, we have to add nearly a teaspoon of sugar.

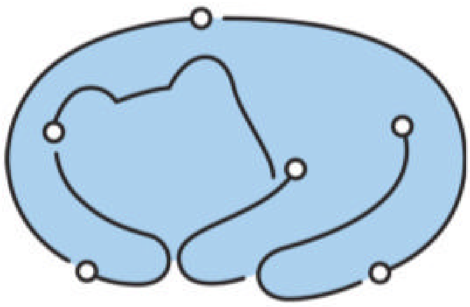
"That makes sense for what the system was designed for," Robert Margolskee told me. He is a biologist at the Monell Chemical Senses Center, in Philadelphia, where he studies the molecular mechanisms of sweet perception. Humans, he explained, evolved in an environment filled with substances that might make us sick or even kill us, and are therefore highly sensitized to unpleasant tastes that may signal danger. But the sweetest thing that early hominids would have been likely to come across was fruit or, occasionally, honey. So although we are now surrounded by cheap, plentiful sources of sweetness, our sugar receptors are still tuned to the level of a ripe banana. "It would be better if our sweet receptors got more sensitive so we would eat less sugar," Margolskee said. "But that's going to take another couple hundred thousand years at least."

It has taken only a few decades for obesity rates to triple in America. In 1960, when national surveys began, fewer than fourteen per cent of adults were obese; today, that figure is forty per cent. Sugar is not entirely to blame for this increase—annual per-capita consumption of cheese, for example, has increased eightfold in the past century, and physical activity has undoubtedly declined. Still, as early as the nineteen-twenties, this mismatch between our saturated sugarscape and our insensitive sweet receptors led doctors and diet gurus to recommend low-calorie sugar replacements. Saccharin, a coal-tar derivative favored by Theodore Roosevelt, who was diabetic, was first marketed as early as the eighteen-eighties; during the past century, it has been joined by a half-dozen competitors, most notably aspartame, which appeared in the nineteen-eighties. (Donald Rumsfeld was in charge of launching it.)

Many of these so-called "non-nutritive sweeteners" have acquired a questionable reputation—frequently perceived as both tasting bad and being bad for you. In 1951, as diet soft drinks and desserts proliferated, the sweetener sodium cyclamate was banned by the Food and Drug Administration, because it caused bladder cancer in rats. Saccharin was later also banned for many years, after some worrying studies were published in the seventies, although the current consensus is that today's artificial sweeteners are not carcinogenic at the levels at which they're consumed.

The issue of taste presents a greater obstacle. Saccharin is sweeter than sugar, and aspartame is almost two hundred times as sweet, but they're not a precise match for sugar. "Unconsciously, we all know the time profile of sucrose," Russell Keast, a food scientist at Deakin University, in Australia, told me. "The onset of sweetness, how long the peak intensity lasts, exactly how long the aftertaste lingers." With Splenda, say, that pattern is different, and not in a way that most people enjoy. Many non-nutritive sweeteners also have metallic or bitter notes, which have to be disguised with other ingredients.

Furthermore, none of sugar's artificial replacements offer anything close to the same range of functionality. Sucrose reduces ice-crystal formation in ice cream; it adds crispness to baked goods, volume to dough, and a mouth-filling viscosity to drinks; it improves emulsion stability in dressings, reduces grittiness in chocolate, and even increases shelf life. Manufacturers thus use it promiscuously, even in foods—mayonnaise, bread, hot sauce—in which its sweetness is imperceptible to the tongue. By contrast, saccharin gives baked goods a grainy texture, aspartame separates when heated, losing sweetness, and sucralose muffins and cakes fail to inflate. "That promise—you know, here we've got this wonderful compound that tells us it's sweet, yet delivers no calories?" Keast said. "You'd have to say it's been a gross failure." Sugar is simply too integral to every aspect of our cuisine for any other molecule to be an adequate substitute.



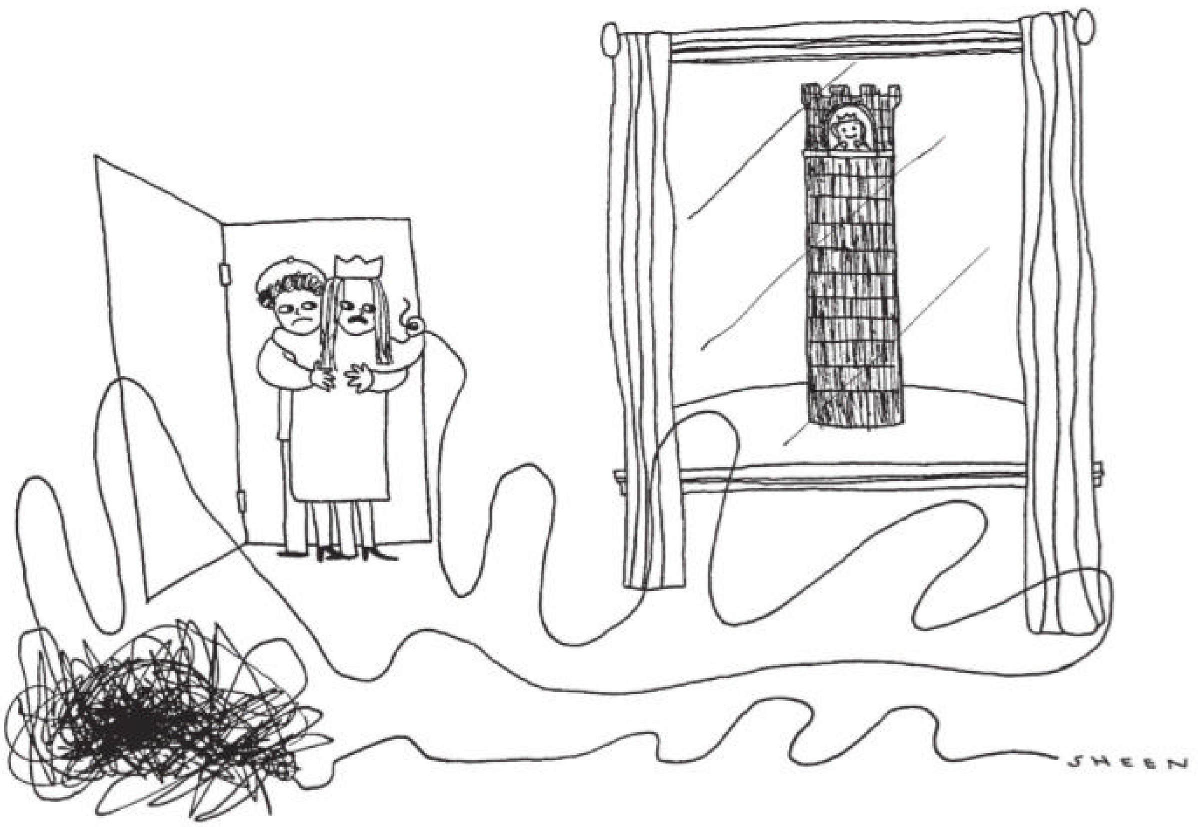
A century ago, Henry Tate, who introduced the sugar cube to Britain, joined forces with Abram Lyle, who had made a fortune selling golden syrup (a treacly by-product of sugar refining), to found Tate & Lyle. Long a dominant force in the industry, the company eventually got out of the commodity sugar business, and today about a fifth of its profits come from the sweetener Splenda, which it developed in 1976. But, in 2010, around the time that Avraham Baniel began playing with the idea of adulterating sucrose with silica, Tate & Lyle's scientists also began looking into ways of retooling, rather than replacing, sugar. "It was obvious at the time," Jim Carr, the head of the company's sweetening-technology division, told me. "Our customers wanted a natural ingredient to make things more nutritional, take calories down—so let's see what already exists in nature."

Sucrose, which is derived from cane or beets, is not the only kind of sugar. As early as the seventeen-nineties, chemists extracted others from various plants. Grapes yielded the first alternative, glucose, which is one of the two building blocks of sucrose, but only three-quarters as sweet. The other is fructose, which is half as sweet again. Through the years, scientists identified dozens of naturally occurring saccharides—all variations on the basic chemical structure of sugar, which is a molecular matrix of carbon, hydrogen, and oxygen atoms. Some of these other sugars are well known: in addition to lactose and fructose, there's amylose (from starch) and maltose (from malt). They are also metabolized as sugars in the body, which means that they have the same dietary drawbacks as sucrose.

Many other sugars, however, are extremely rare—found in such unlikely sources as freshwater algae, aphid secretions, mastic, and even on meteorites. Some of these turn out to behave differently in our bodies, which offers the hope that they may be able to deliver sugar's sweetness without its metabolic payload. Until quite recently, very little was known about these compounds; they were expensive and time-consuming to extract. Rare-sugar research finally came to the forefront after a breakthrough in Japan in 1991, when Ken Izumori, a professor in the agriculture department of Kagawa University, found an enzyme capable of flipping the orientation of three of the carbon atoms in fructose, turning it into a completely different sugar: allulose, which occurs naturally, albeit in minute amounts, in figs and maple syrup. (Izumori had spent twenty years conducting a global microbial survey in search of a suitable enzyme, before discovering it in a species of bacterium in the soil behind the faculty cafeteria.)

Tate & Lyle now sells allulose to the food industry under the brand name Dolcia Prima. When I visited the company's Global Commercial and Food Innovation Centre, a hundred-thousand-square-foot facility on the outskirts of Chicago, the head of the laboratory there, Michael Wakeley, was using what he called "a sugar-cookie-model system"—or what most people would call baking—to test Dolcia Prima's performance against various alternatives. "I'm going to switch out a bunch of different sugars and measure the effects on cookie spread, stack height, color, texture, shelf life," he said. "There'll be a sensory component, too"—in other words, we'd get to eat the results.

Ranged in front of him were such industry standards as high-fructose corn syrup, glucose, and regular sugar, as well as a couple of rare sugars that have recently become available commercially: trehalose (which is found in a variety of organisms, including shrimp and shiitake mushrooms) and tagatose (trace amounts of which can be found in fruit, dairy products, and cacao). Dolcia Prima allulose looked exactly like ordinary refined cane sugar: a little less sparkly, perhaps, because its crystals are a different shape—rods rather than cubes. On the tongue, it was sweet in exactly the same way as sucrose, rising in intensity and then lingering, but it seemed subdued, almost in the way that flavors are when you have a cold. "That's because it's seventy per cent as sweet," Abigail Storms, the vice-president for sweetener innovation, explained. "But it only has a tenth of the calories." In fact, Storms explained, early studies seem to show that the body cannot digest allulose at all, and simply excretes it intact, which would make it zero-calorie, though the F.D.A. has ruled that there is not yet sufficient research to conclusively determine its true caloric value. Neither of the two other rare sugars offers such a promising ratio: trehalose yields only half the sweetness while being just as caloric as sugar, and tagatose, though a little sweeter than allulose, produces only a fifty-per-cent reduction of calories compared with sugar.



"Whose hair did I just find on your jacket?"

• •

As Carr showed me around the facility's sensory-evaluation booths, he handed me a soft caramel candy—sticky, butterscotchy, delicious—made with butter, vanilla, and allulose. Allulose caramelizes, it fluffs, it stabilizes, and it delivers both mouthfeel and crumb structure in baked goods. "It behaves like a sugar because it is one," Carr said. Yet, despite the fact that this rare sugar behaves almost exactly like sucrose in the kitchen, it remains sufficiently alien to pass through the human intestine without being digested or fermented.

Tate & Lyle's proprietary method for producing allulose uses corn, which makes it affordable, if not quite as cheap as sugar. Even so, the food industry was initially cautious: allulose still had to be listed as an added sugar on packaging, which was bound to deter consumers. The company spent five years lobbying the F.D.A., presenting independent studies showing that allulose didn't elevate blood-sugar levels and didn't cause dental cavities. Last year, the F.D.A. finally agreed that, for the purposes of nutrition labels, allulose wasn't a sugar. Manufacturers quickly got in touch, wanting to incorporate Dolcia Prima into their products. "The confectionery industry absolutely needs something like allulose to get to the kind of targets that they've set themselves," Storms said. She hopes that it may soon be available to home bakers, too.

Before I left, Storms and Carr had me taste more allulose-laced products: ice cream, cookies, Swedish fish, and a blueberry-cobbler-flavored protein bar that was jaw-achingly sweet. "You don't have to finish it," Carr said, as I grimaced. On my way back to the airport, I gave my taxi driver a couple of allulose chocolate truffles that Storms had handed me for the road. He popped one into his mouth with an appreciative "Mmm," and told me he'd save the other for his girlfriend. "Zero calories?" he said, shaking his head. "Are you sure?" As he pulled into the departures level of O'Hare to drop me off, I saw him reach into the cup holder and unwrap the other truffle.

In 2018, the food giant Nestlé, whose Milkybar line is the most popular brand of white chocolate in the U.K. and Ireland, launched Milkybar Wowsomes. These consisted of a crispy filling surrounded by a shell of either milk chocolate or white chocolate, and they contained thirty per cent less sugar than an equivalent chocolate bar, thanks to what the company called "an aerated, porous sugar." Nestlé's restructured sugar operates on much the same principle as DouxMatok's Incredo. To create a sugar crystal that would dissolve more readily on the tongue, the company's scientists mixed sucrose with milk and then spray-dried it under pressure. In cross-section under the microscope, each granule resembles Swiss cheese, the air pockets helping to reduce the amount of sucrose delivered per crystal.

But last year, after disappointing sales, Nestlé withdrew Wowsomes. Consumers complained that the interior felt thick and "unmelty." They also felt that Wowsomes were too expensive. Petra Klassen-Wigger, a nutritionist in Nestlé's research division, explained that although the product was more costly to produce than one with sugar, "psychologically speaking, people believe that if you're taking something out it should be less expensive." She added that Nestlé will likely use the restructured sugar in other products, and that it is also developing a new sugar-reduction technology for release later this year. (The details are secret, but it is based on fermentation.)

Each of the current alternative sugars has advantages and disadvantages. Tate & Lyle's zero-calorie allulose beats the respective forty- and thirty-per-cent reductions of DouxMatok's and Nestlé's products. Allulose can also be used in drinks, whereas the restructured sucrose crystals break down in water. However, if you replace sugar with an equal amount of allulose, you end up using substantially more of it than is currently legal in most foods, thanks to an artifact of the F.D.A.'s approval process. In order to make sure that even someone consuming large portions of several allulose-sweetened products couldn't exceed the amount proven safe for daily consumption, the F.D.A. took that amount and divided it among several product categories—yogurt, cookies, soft drinks, candy, and so on—with the result that the quantity allowed in any one of these is significantly lower. This means that allulose will almost always be combined with other ingredients: soluble cornstarch, for bulk; perhaps a natural sweetener, such as stevia; and sugar alcohols, such as xylitol and erythritol. Each of these ingredients has its own issues: odd flavors, late or lingering sweetness, a cooling sensation, digestive repercussions.

DouxMatok's Incredo, being ninety-nine per cent sucrose, is not subject to regulatory constraints, but any food that uses it still requires reformulation. If you remove the fifty-seven teaspoons of sugar in a jar of Nutella and replace them with thirty-five teaspoons of Incredo, the jar will be noticeably underfilled. And although the product would taste sweet enough, everything else would be off. "The mouthfeel, the balance, the color—everything goes," Baniel said. Similar problems arise with the Petit Beurre cookie. "When you just reduce the sugar with Incredo and leave everything else the same, the salt gets a presence you don't want it to have," he said. "And the vanilla, on the other hand, goes hysterical."

Estella Belfer, a pastry chef who is a judge on the TV show "Bake-Off Israel," hopes to use Incredo exclusively one day, but, recently, she told me about some of the challenges of cooking with it. "To make chocolate, it's easy. I just substitute the sugar with a smaller amount. In shortbread cookies, it is an improvement—it makes them crispier," she said. "But in the cupcakes and the sponge cakes—this is where there is an art to using Incredo sugar." Sugar is responsible for much of the tender, springy texture of a good cake; Incredo sugar behaves exactly the same way, but there's a lot less of it, which creates a problem. Belfer told me that she has successfully blended other ingredients, including soluble fibre and plant proteins, to restore the missing bulk and fluffiness—"but it's not easy." Baniel has seen so many food manufacturers struggle with Incredo that he refuses to send out samples unless they are accompanied by a member of his staff. "Our sugar needs a nanny," he said. "It can't travel by itself." While I was in Tel Aviv, DouxMatok's head chef was in England, teaching a well-known retail chain how to bake with Incredo.

As I sampled one of Estella Belfer's elegant, Incredo-sweetened cookies, I experienced a twinge of anxiety. Biologically, our capacity to taste sweetness exists not just to provide pleasure but also to warn the rest of the body to prepare for a sugar onslaught: at a signal from the taste buds, the pancreas gears up to produce more insulin, and gut hormones are released to help us absorb glucose into the bloodstream. When these processes stop working as they should, the result is diabetes. Surely it couldn't be wise to repeatedly fool my taste buds into telling my pancreas to panic, only for just half the promised sugar to show up?

MR. FIX-IT
S. GROSS

When I expressed my biochemical concerns to Robert Margolskee, of the Monell Center, he said that I probably shouldn't worry. "Yes, your pancreas would be, like, 'Hey, you guys were getting me all excited for nothing,'" he said, but explained that our bodies have a built-in safety system to insure that blood insulin doesn't spike until high levels of sugar are detected in the bloodstream, rather than just on the tongue. His larger worry is that reduced-calorie sweeteners appear not to provide the sense of fullness and satisfaction that sugar does. There are two types of sweet receptors on our taste buds, and Margolskee's lab has discovered that one of them responds to molecules that taste sweet only if they also contain calories. This may help explain the otherwise confusing finding that habitual consumers of artificial sweeteners do not usually weigh less than their sugar-consuming peers. "How much impact does that second pathway have on liking, or on other physiological responses?" Margolskee said. "We don't know those answers yet."

Recent research has vastly expanded our knowledge of how sweetness is processed in the body, revealing that the conscious sensation of taste is only a small part of a complex nutrient-seeking system. Sucrose and artificial sweeteners, even at concentration levels too low for our taste buds to register, activate different regions of our brain, and varying forms of sugar interact differently with our gut microbes. Most remarkable, we have receptor cells for sweetness not only on our tongues but all over our bodies. Twenty years ago, researchers in Liverpool discovered sweet receptors in the intestine wall, identical to the ones in our mouth, and since then taste receptors have been found elsewhere in the digestive tract, and even in the central nervous system, in skin, in the testes, and in the lungs.

The effects that most of these cells trigger are still unknown, so it's conceivable that my concern about a mismatch between the sweetness signal on the tongue and subsequent blood-glucose levels isn't misplaced. Yanina Pepino, a professor of nutrition at the University of Illinois, told me about a surprising discovery during a recent experiment in her lab: participants secreted less insulin in response to a glucose drink if they had so much as tasted Splenda beforehand. Simply swishing an artificially sweetened liquid over the tongue and spitting it out was sufficient to disrupt the body's mechanisms for regulating blood-sugar levels. "The job of the brain is to be able to predict and try to orchestrate responses to better handle the stress of sugar in your next meal," Pepino said. "And this research suggests that it does that best when you have a match between the intensity of sweetness and the amount of sugar in that load."

Pepino believes that sweetness affects metabolism in and of itself, whether or not calories are involved. "Sweetness is a very powerful signal," she said. "And I think we're missing the boat by trying to have the same product with the same level of sweetness, and just reducing the calories." Russell Keast told me something similar. "Anytime we think we've got one over on our biology, there will be collateral damage somewhere," he said. Margolskee is more optimistic. "We are bags of molecules," he said, and pointed out that we already know how to trick the receptor proteins that respond purely to sweetness using artificial sweeteners; in time, we'll surely find a way to fool the receptors that sense sweetness-plus-calories. "I think within five years we'll be able to reduce eighty to ninety per cent of the sugar in a food and still get pretty much the full sugar sensation," he said. "It's not an impossible dream."

People in the food industry talk a lot about "revealed preference." In surveys, customers tell you that they want healthy choices, but analysis of purchasing patterns reveals a different hierarchy of priorities: customers care about taste above all else, and value for money to a certain extent; any other claim that a product touts, be it health benefit or environmental impact, lies far behind. "If you get taste and value right, people will go for health every day of the week," Nick Hampton, Tate & Lyle's C.E.O., told me. "If you can't get those two things right, forget it."

Having recently tasted so many products formulated with unusual sweeteners, I'd somewhat lost sight of my own preferences, and so, in January, when I had friends over for dinner, I treated them to samples of the exotic confectionery I'd accumulated. There were allulose caramels, a mini-jar of Incredo Nutella, a Japanese limited-edition reduced-sugar Kit-Kat sweetened with pulp left over from processing cacao, and even one of the ill-fated Wowsomes, which I'd tracked down at an online store that supplies British expats in North America with nostalgic junk food. I quickly found myself apologizing for the offerings. Comments such as "Is this off?," "Like cardboard," and "Why is it so acrid?" characterized the tenor of the response. There were a couple of winners, though: the Wowsomes ("I guess I don't mind this?") and the allulose caramels ("This is a multimillion-dollar product!").

As I cleared away the uneaten treats, I thought about all the money and the scientific ingenuity that had gone into creating them, and I started to wonder: Couldn't we just eat less sugar? The biological triggers that researchers like Margolskee study seem inexorable, but they weren't such a problem before sugar became cheap and ubiquitous. Catering to our revealed preference, manufacturers have amplified it: today, three-quarters of all packaged foods contain added sugar, and, if we continue on our current trajectory, half of the world's population will be overweight or obese within fifteen years, and an estimated one in every six Americans will be diabetic.

Hampton mentioned that, before he came to Tate & Lyle, he worked at PepsiCo, where he managed to cut salt levels in British potato chips by half during a five-year period, without anyone noticing. "Can you do it with sugar as well? That'd be interesting," he said. In the past few years, several companies have successfully reduced sugar in breakfast cereals without affecting sales, but Margolskee and his colleagues have found evidence that lowering our satisfaction threshold for sweetness may not be quite as easy as adjusting our salt preferences. Assuming it is possible, achieving meaningful sugar reduction would require industrywide compliance on a scale never before attempted. Nonetheless, even the scientists redesigning sugar admit that the ultimate goal is to gradually lower sugar levels and retrain our palates—and that their innovations represent a sophisticated, but ultimately short-term, fix. Just as the only good substitute for sugar is sugar, the only good way to eat less of it, sadly, is to eat less of it. ♦

SHOUTS & MURMURS

LUCI GUTIÉRREZ

S.O.S.

BY NOAH BAUMBACH

Hi, my name's Greg. How can I help you?

Hi, Greg, my name's Noah. I'm having trouble with my computer.

What's the trouble, Noah?

My screen is frozen.

O.K., Noah, let's try this. Do you see the System Preferences?

No, where's that?

In the toolbar.

Where's the toolbar?

Under the Elements column.

I see something called View.

It should be four down from View.

O.K.

Found it?

Yes.

Click on the Apple icon and scroll down to System Preferences.

O.K.

Do you see something that looks like a pie?

There's nothing there.

. . .

Here's what I want you to do. Do you see a chair?

I'm sitting in one.

. . .

Hello?

Is there another chair?

There's another chair, yes.

. . .

It has cushions. Is that O.K.?

. . .

Hello?

I want you to look underneath it.

O.K.

Are you underneath it?

I'm under the chair.

Why?

I thought I was supposed to . . .

:) Let's try this. Is there a couch?

Yes.

Hmm . . . What's in the other direction?

A window.

O.K., let's try something else. Is your System Preferences open?

Should I get back in my chair?

The original chair, yes.

O.K., I'm here.

See if your S.P. is opened up on your desktop.

S.P.?

. . .

Oh, wait, I just figured that out.

:)

Just a minute. O.K., it's open.

. . .

Hello?

O.K., what operating system are you working on?

I don't know.

O.K., Noah, do you see the wall in front of you?

Yes.

Go over to it.

. . .

Are you there?

Yes, just had to come back and get the computer.

No worries.

I'm at the wall.

Does it open?

The wall?

:)

It doesn't.

Put your hand on the wall.

O.K. It's on.

Say "Open sesame." :)

O.K.

Did a secret portal open?

No.

. . .

Hello?

I'm here. O.K., I want you to update your system.

How do I do that?

Are you able to lick your computer?

I mean, yeah, but . . .

Lick the screen.

Just, like . . . lick?

Yes.

O.K.

. . .

It tastes like—

Citrusy?

No, like a—

Now, press very hard on the wall.

O.K. I'm pressing.

Now, stamp your feet.

O.K.

Did it open?

Something did, yes.

Good. Here's what you need to do. Walk in.

It's narrow.

. . .

Hello?

Can you crawl?

I can try.

Let me know when you’re inside the wall.

O.K., I’m inside the wall.

. . .

Hello?

Where are you now?

As I said—

There should be a lever.

Yes, let me just pull—

DON’T PULL THE LEVER!

I already pulled the lever.

:(

Hello?

. . .

Hello?

Is there a gnome?

Oh, I don’t . . . let me see . . . I think actually . . . Yes, there’s now a gnome.

Do not ask him to take you to the cyclops.

Asking . . .

DO NOT.

Oh, sorry, I asked him.

What did he say?!

He’s considering it.

In the meantime, scroll over to your Apple menu.

O.K. . . .

You with me?

Yes.

Are all your updates up to date? :)

Hold on, the gnome is saying something . . .

No worries.

He’s asking for a gold coin.

O.K., do you have Apple Pay?

I don’t.

Scroll over to the—

He says I must answer a riddle if I want to pass.

Just a minute . . . :)

Hello?

. . .

Hello?

O.K., what is the riddle?

“What has four suns but only one moon?”

. . .

Hello?

. . .

He’s getting really angry.

I’m here.

Do you know the answer to the riddle?

Is it an anagram?

I have no idea!

. . .

He’s cursing and waving a scythe at me.

Let’s try this . . .

O.K., I gave him my watch, which has calmed him down momentarily.

Do you see the menu bar?

Uh, yeah . . .

Click on that.

O.K., I’m trying to talk him down.

Hit him with your computer.

Like, just . . . ?

HIT HIM WITH YOUR COMPUTER.

O.K., I did.

Did that work?

He’s stunned, but not for long, I fear.

Go back to the menu bar.

O.K.

Do you see a skull icon?

I do.

Click on that.

He’s coming at me with the scythe!

O.K., on your right, do you see a chest?

Next to the human skeleton, yes.

Open the chest.

O.K.

Do you see a broadsword?

Hold on . . . Yes.

Pick it up.

O.K.

. . .

Hello?

Kill the gnome with it.

Can you hold on a minute?

Of course.

I killed a gnome.

:) Are you sure the gnome is dead? Because they’re tricksters and sometimes they play dead in order to surprise attack you at a later date.

He’s turning very old all of a sudden.

That means he’s dead.

O.K., good, I guess?

No, this is very bad luck.

Oh, shit.

And it means the cyclops will be coming posthaste.

O.K.

I want you to look around the neck of the dead gnome.

Looking . . .

:)

O.K., I’m at the neck of the gnome corpse.

Is there a locket around his neck?

Let me . . . Yes . . .

Open it.

There’s some kind of potion?

O.K., good. I want you to drink that.

Really?

. . .

REALLY?!

Yes.

O.K.

. . .

It tastes horrible.

:(

What now?

. . .

I don’t feel anything.

You will.

I see a spinning ball.

On your screen?

In the air.

It’s working.

It’s working.

Spaghetti legs?

:)

I’ll wait.

c nag u aFegja”vk[[qrjAEI=

Have you shrunk down? You can answer me by jumping on the Y key with all of your might.

y

O.K., here’s what I want you to do. Are you able to communicate with your thoughts?

No, why would I?

:)

Did you hear that?

Yes.

I’m communicating with my thoughts!

Now, do you see the headphone jack to the right of your computer?

Yes.

Go inside. And hurry—the cyclops can’t be too far behind.

O.K.

There should be a lot of metal and wires and things.

Yes.

Now, I want you to evaporate into pure energy.

How do I do that?

You tell me. :)

O.K.

Your corporeal body will be gone forever, but your soul and *being* will live on.

Get ready, Greg.

I’m ready, Noah.

It’s happening, Greg.

Is your screen still frozen?

I AM THE SCREEN.

:)

. . .

I hope this has been helpful.

. . .

Would you mind taking a short survey to let us know how we’re doing? ♦

ANNALS OF PSYCHOLOGY

THE SHAMING PANDEMIC

How Internet culture has further weaponized the coronavirus.

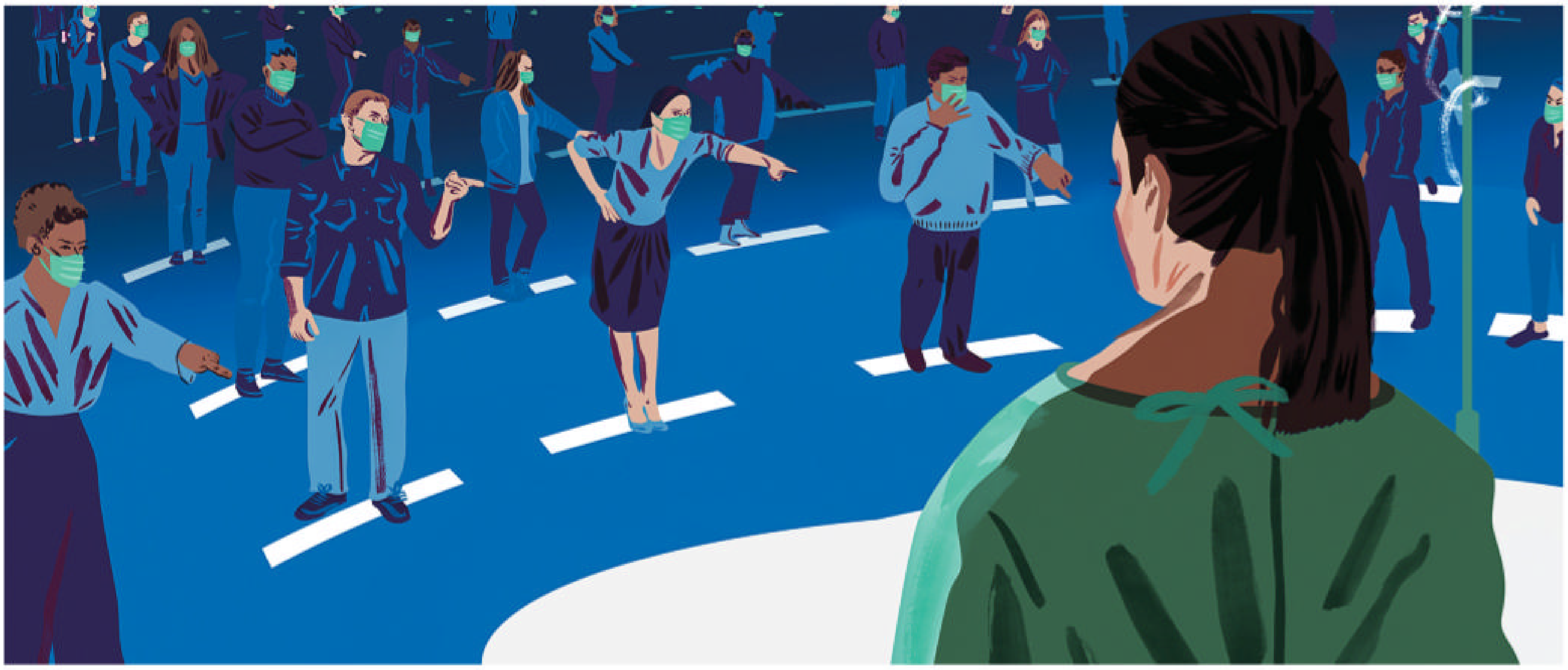
BY D. T. MAX

On February 18th, Nga Nguyen, an Instagram influencer who likes travel and couture, flew from London—her "base"—to Milan, where she attended Gucci's spring show. The fashion house picked up the bill for the flight and the hotel. Nga, who is twenty-eight, explained to me, "I have a very good relationship with all the brands, whether as a long-term client or just as a friend." She was joined in Milan by her sister, Nhung, who is a year younger and lives in Hanoi, where she manages a luxury hotel that their family owns. A week after the Gucci event, the sisters took the Eurostar to Paris, for the Saint Laurent show; they then went to London, where they stayed at Nga's house. On March 1st, Nhung flew back to Vietnam and Nga made a short business trip to Germany, where she also took a relative to a doctor's appointment. In the examination room, Nga coughed slightly. "The doctor looked up and suggested a coronavirus test," she recalled. "I thought he was joking."

The doctor swabbed a mucus sample from Nga's nose, and told her to go to the relative's house and wait. She remembers feeling fine, but that evening she developed a fever, and her cough worsened. Two days later, she had pneumonia, and her coronavirus test was positive. A runner who can normally cover four miles in half an hour, she could barely walk. On March 12th, emergency workers took Nga to the hospital. She remained there for more than a week, then returned to her relative's house, where she eventually made a full recovery. Now back in London, she feels "very grateful for the care" that she received in Germany.

When Nhung arrived in Hanoi, she passed through an airport checkpoint, and had no fever. But she began coughing that night. Four days later, she became Hanoi's first confirmed COVID-19 patient. She spent two weeks in isolation at the National Hospital for Tropical Diseases, then went home to quarantine. She, too, has recovered and is thankful to the doctors who treated her.

The sisters' experience differed in one crucial way. European Union nations have strong privacy protections, and no one besides Nga's family and a few friends knew that she had COVID-19. Nhung's case became public knowledge. Before she received her diagnosis, Vietnam had a small number of coronavirus cases outside the capital, and the outbreak had dwindled to nothing. A Vietnamese journalist told me, "The government was thinking of declaring Vietnam free of an epidemic." Nhung spoiled the plan. The authorities, determined to make other Hanoi residents stay home, especially in Nhung's neighborhood, made a show of locking down her street. That wasn't all: the Vietnamese government, which regularly uses newspaper leaks to persuade or frighten its citizens, invited the press to watch a live stream of a meeting about the young woman's medical condition. Within an hour of articles about the meeting being published, people on the Internet had figured out who Nhung was and found her social-media accounts.


Online shaming isn't as brutal as the Puritan stocks, but the scale can be devastating: hundreds of vicious messages per second.

In less than a day, Nhung's Instagram account had ten thousand new followers—and many of them were attacking her. Things got so out of control that she changed her account setting to private. Although she was lying in a hospital bed, people kept claiming to see her bustling about the city. One user came across a photograph of a woman who looked like Nhung at the grand opening of a Uniqlo, and reposted the image on Instagram, an-

ILLUSTRATION BY CHRISTINE RÖSCH

18+

WHAT IS
AVAXHOME?

AVAXHOME –

the biggest Internet portal, providing you various content: brand new books, trending movies, fresh magazines, hot games, recent software, latest music releases.

Unlimited satisfaction one low price
Cheap constant access to piping hot media
Protect your downloadings from Big brother
Safer, than torrent-trackers

18 years of seamless operation and our users' satisfaction

All languages
Brand new content
One site

AVXLIVE.ICU
AvaxHome - Your End Place

We have everything for all of your needs. Just open https://avxlive.icu

nouncing to her followers that Nhung was partying while sick. Another user posted a picture of a different look-alike walking along Ta Hien, Hanoi's nightlife strip, and suggested that Nhung was casually infecting passersby. Next came a rumor that Nhung had gone to visit her boyfriend in Vinhomes Times City, an upscale district.

The Vietnamese government, clearly committed to making an example of Nhung, let it be known that when she flew home from London she did not mention her visit to Italy. Not only had Nhung apparently infected her sister; according to officials, she was the probable source of infection of ten other people on the flight, all of whom tested positive shortly afterward, as well as the driver who picked her up from the airport, her housekeeper, and one of her aunts. Some of the infected airplane passengers were British tourists, leading the *Daily Mail* to proclaim that Nhung was a "super-spreader." The Vietnamese government posted photographs of Nhung in her hospital room—ostensibly to prove that she was recovering—and social-media users marshalled these images to lambaste her yet again.

The wave of anger also reached Nga in Europe. She was pictured in articles about the fashion industry and the spread of COVID-19. It made no difference that she appeared not to have infected anyone. "The people I interacted with during Fashion Week were all fine," she told me. "My photographer and my makeup artist were in close proximity, and they were O.K." Nevertheless, enraged Vietnamese mined Nga's Instagram account, including recent photographs from her trip to Milan and Paris, to portray her as heedless and decadent. Trolls dug up an old image of Nga on vacation in Mykonos, dressed in Saint Laurent and standing beside Salt Bae—the Turkish celebrity chef known for the extravagant way he sprinkles salt while cooking. Someone in Vietnam dotted the Mykonos image with bright crown shapes, to suggest that Nga was dispensing the coronavirus like salt. Instagram users gave the image almost eleven thousand likes. One Vietnamese commenter said of Nga, "She has the collective consciousness of a cunt." Another declared, "Please help me send a fuck you to . . . Nhung's whole family."

The source of Nga's prominence—her glossy Instagram account—became a cudgel to beat her and her sister with. One social-media user tried to pit the Nguyens against each other. "I've followed you for a long time because you're talented," a woman from the city of Ha Long wrote to Nga. "But I really cannot accept your sister." She added, "I hope you and your family will recover quickly."

The attacks hurt the sisters when they were at their most vulnerable. Nhung secluded herself and turned to meditation. Nga told me, "Battling the virus while all these articles are slapping at you makes it harder." She saw the attacks as examples of class jealousy: "In Vietnam, we are too privileged—we travel too much." She ascribed the extraordinary attention she and her sister received elsewhere to racism, noting, "If this was Paris Hilton, there would not be so much fuss."

Public shaming used to take place in the public square. By the nineteenth century, it had moved to the newspaper, and in the twentieth century the forum was television. Today, people are scorned online. The Internet, with its opportunity for anonymity, its absence of gatekeepers, and its magnification of transient hurts, has made it unnervingly easy to generate instant mass outrage. The blog, a venue of self-reflection, has given way to the social-media post, which tends to favor the impulsive attack and the group pile-on.

Digital shaming delivers swift and overwhelming retribution, often unfairly. You don't even have to be in the right to successfully pillory someone: all you need is to feel that you have been wronged. In 2015, an Australian man at a shopping center took a selfie in front of a poster of Darth Vader and sent it to his kids. A mother standing nearby, mistakenly thinking that the camera was pointed at her children, decided that the man was a predator. She photographed him and posted the image on Facebook, warning, "Take a look at this creep!" The post was shared twenty thousand times. When the man's partner told him that people online were calling him a pedophile, he drove to the local police station to clear his name. It was too late: he had already been identified on the Internet. He received death threats. After his accuser's error was revealed, so did she.

Earlier this year, when Singapore was in lockdown, a local woman was caught on video refusing to wear a mask while ordering at a food stall. The clip went viral, and online commenters misidentified her as Tuhina Singh, the chief executive of a tech company. An online mob doxed Singh—posting her e-mail address and telephone number. She was subjected to attacks until Singapore authorities revealed that the actual culprit was named Paramjeet Kaur. Social-media users then pounced on Kaur, calling her a "Covidiot."

Digital shaming has its defenders. When wrongdoers are socially powerful, registering frustration with them on such forums as Twitter can seem more like collective resistance than like bullying. The #MeToo movement, for example, has exposed many celebrities, politicians, and executives who have engaged in inappropriate behavior. A similar logic has guided the filming of police violence that gave rise to Black Lives Matter. Jennifer Jacquet, a professor at New York University, has argued that digital shaming can succeed when other forms of political action fail: a viral video of environmental destruction can become a worldwide scandal that forces a corporation to adopt greener policies. In a 2015 book, "Is Shame Necessary? New Uses for an Old Tool," Jacquet notes that the mere possibility of public censure is often sufficient to keep people in line: "At its most efficient, a sense of shame can regulate personal behavior and reduce the risk of more extreme types of punishment." She recently told MSNBC that the COVID-19 pandemic is opening up "a lot of opportunity with shaming"—though she cautioned that people should condemn "a broad sweeping behavior," such as gathering in large groups indoors, rather than harass "a particular individual."

Online shaming may not be as brutal as the Puritan stocks, but it can be devastating in its scale: a target of ire who is trending on Twitter might receive hundreds of humiliating messages per second. Sometimes digital campaigns go too far even for those who unleash them. This past spring, a New Yorker named Christian Cooper went bird-watching in Central Park, and asked a woman to put her dog on a leash. When she refused, he began filming her, and she responded by calling the cops and telling them pointedly that "an African-American man" was "threatening" her. His sister posted the video on Twitter. "She needs a good public shaming," one user said. "Do your thing Twitter." Millions of people watched the clip, and the woman—a business executive named Amy Cooper—became so notorious that the investment firm where she worked fired her. Amy Cooper's behavior was appalling, but Christian Cooper seemed a little shaken by the backlash against her, telling the *Times*, "I'm not excusing the racism, but I don't know if her life needed to be torn apart."

Lawrence Garbuz is a fifty-one-year-old trusts-and-estates lawyer. He lives in New Rochelle, in Westchester County, and works at a firm, in midtown Manhattan, that he co-founded with his wife, Adina Lewis. They have four children, including one at Yeshiva University and another at a high school in the Bronx.

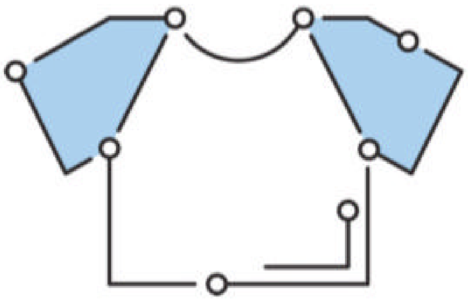
One day in February, Garbuz developed a cough and a fever. At the time, nearly all Americans known to have COVID-19 had gone abroad or been in contact with others who had. Garbuz had hardly travelled recently, and he sat at his desk all day, so he wasn't worried about being infected.

Yet he continued to feel worse, and, after his doctor suggested that he go to the hospital, a friend drove him to one in Bronxville. An X-ray appeared to show ordinary pneumonia, so no special measures were taken to isolate him when he was admitted. Garbuz is an active member of a synagogue in New Rochelle, and part of Jewish tradition is to visit the sick. As many as a dozen friends and family members went to see him. After four days, he was having such difficulty breathing that he was intubated and transferred to Columbia-Presbyterian Hospital—again without special precautions. There, on March 2nd, he was given a COVID-19 diagnosis and placed in a medical coma, so that he could be on a ventilator without discomfort. Three weeks later, Garbuz was out of danger. By then, more than twenty-three thousand people in New York State had tested positive for the coronavirus.

Before Garbuz went to the Bronxville hospital, he had attended a funeral and a b'nai mitzvah—unknowingly exposing more than a hundred families. Unfortunately, he appears to have been an efficient spreader of the virus: his wife, his two children who lived at home, his friend who drove him to the hospital, and a nurse who treated him soon tested positive for the virus. In all, Garbuz was at the center of an outbreak of ninety infections.

His diagnosis was reported at a time when America was still hoping to avoid the devastation that had occurred in China and Italy. On March 3rd, New York's mayor, Bill de Blasio, tweeted the name of Garbuz's law firm—Lewis and Garbuz—and mentioned where his children attended school. The Mayor's intention was to alert anyone who might have come into contact with the family, but the effect was to violate a patient's privacy. A surprised commenter asked on Twitter, "Can you really spill this much info about a person if they test positive?"

Adina Lewis had long used social media to chronicle the turns of her personal life. After de Blasio's tweet, she wrote on Facebook, "I ask all of us who are running on the hamster wheel of life, particularly us New Yorkers, to learn from this and take a moment to take care of yourself." Most Facebook users who commented on her post wished her husband a quick recovery. A woman named Nora Madonick said, "That anyone would consider this anything other than a terribly unfortunate situation with no possible blame is unthinkable." Others were lacerating. A young man whom the Garbuzes had never met posted, "I hope your business never rebounds for what your husband has brought upon us." The hostility directed at the family spread beyond the digital realm. A New Rochelle laundry refused to wash the family's clothes, and for more than a week their mail stopped being delivered; only after Lewis complained to the town's mayor did it resume.



On Purim, Lewis returned to Facebook to wish others a happy holiday, and commented that she was trying to see the "blessing" in "this cluster of virus." Perhaps her husband was "a messenger of something good," and "his illness was able to make us all aware of the problem." She reminded people that her husband hadn't had any known risk factors. "Let's all stay rational and calm," she urged. "Let's continue to find the humor in the absurdity of it all. I look forward to being able to laugh about the time we were all 'coronaed' (a verb I just made up) with all of you."

The post elicited more than four hundred comments—many of them scathing. A resident of Rye wrote, "A blessing?," and went on, "He did not go to one party he went to three. He continued to travel on metro north. He was coughing. His hands were filled with germs. Anyone he touched got sick. . . . It was thoughtless and reckless." A man from Queens wrote, "He kept going to the synagogue where the rabbi and other congregants tested positive who then spread it to hundreds of people and now New York has over 20,000 cases and 157 people are dead in the city and people can't pay their rent. Don't call this a blessing." Another commenter said, "I did have a family member pass due to COVID-19. I will NOT hail your husband as a hero!" Then there was the young man who had told Lewis that he hoped her husband's career would not recover. "He deserves to die," he wrote. "He's a scumbag. Endangered hundreds of thousands of people. He will never be able to live in New York again after this and he deserves it."

People with contagious diseases have often been targets of shaming. In 1907, Mary Mallon, a cook for wealthy families in New York, was confirmed as the first healthy carrier of typhoid bacteria. She had inadvertently infected seven of the eight families she worked for. Mallon was ordered into quarantine but did not accept responsibility: how could she infect others if she wasn't sick? She was released from quarantine after agreeing not to work as a cook again. But she changed her name and began cooking for a new household, causing more infections. Forcibly returned to quarantine, she was denounced in newspapers and given a memorable nickname: Typhoid Mary. One article featured an illustration of a woman frying skulls in a skillet. In a letter that Mallon wrote in 1909, she lamented that she had become "a peep show for everybody."

During the flu epidemic of 1918, the U.S. was at war, and many officials used the language of patriotism to encourage compliance with policies that staved off infection. In San Francisco, masks became mandatory, and that October a hundred residents of the city were arrested for violating the rule. (Most pleaded forgetfulness.) The *Chronicle* published a list naming many of the offenders, explaining, "The man or woman or child who will not wear a mask now is a dangerous slacker."

Shaming has been part of each subsequent epidemic, from AIDS to SARS, but nothing prepared the world for the ubiquity of it during the COVID-19 crisis. At a time when ordinary social life has nearly been eliminated, social-media use is soaring, and ordinary acts can be dangerous, almost every day is punctuated with multiple waves of online outrage. People have been shamed for stockpiling toilet paper and paper towels, for going to stores to buy groceries, and for having them delivered. They have been shamed for not wearing a mask, or for wearing medical-grade masks on the street. They have been shamed for paying too much attention to their health, and for not being mindful enough. In the U.K., the police have deployed drone footage to embarrass dog walkers for using their pets as a pretext for engaging in nonessential activities. In Florida, a man dressed as the Grim Reaper, who has reminded people on beaches to keep their distance, has received death threats online.

"Lego is the only thing keeping this household together."

Digital shaming seems to become particularly virulent when there is no agreement on what constitutes correct behavior. Many COVID-19 statutes are vague; the epidemiology behind the disease is in flux. How close is too close for sunbathing beachgoers? Are neck gaiters worthless at containing your droplets, or just as effective as traditional masks? Meanwhile, the U.S. is being led by a President who derives part of his political power from belittling expertise. To the consternation of liberals, he has resisted wearing a mask, and his disdain has been mirrored by many of his followers, who condemn mask-wearers as "sheeple."

When two brothers from Tennessee amassed nearly eighteen thousand bottles of hand sanitizer to resell on the Internet, social-media users devoured them. "I hope that man from Tennessee overdoses on sanitizer for being such a useless, repulsive piece of shit," a woman from New Jersey tweeted. Abashed, the brothers agreed to donate the goods instead. One of them issued a public apology, saying, "If by my actions anyone was directly impacted and unable to get sanitizer from one of their local stores because I purchased it all I am truly sorry." He then told the *Times*, "That's not who I am as a person. And all I've been told for the last 48 hours is how much of that person I am." The Augusta *Chronicle*, declaring justice well served, said, "The vast court of public opinion is superbly suited to shame morally ambiguous opportunists."

Even though the public has treated superspreaders as if they had intended to transmit the disease to others, incidents in which someone has deliberately spread COVID-19 to unsuspecting people have been virtually nonexistent. In March, ABC News reported that the F.B.I. had advised local law enforcement that far-right groups were planning to give the virus to their enemies, by sending infected supporters to Jewish services and spraying police officers with infected fluid. No such acts have occurred.

When the pandemic began, Wojciech Rokita, a gynecologist and obstetrician in Kielce, Poland, was also serving as a governmental health consultant for the region surrounding the city. Under his direction, the area's neonatal mortality rate had gone from the worst in the nation to the

best. In 2018, when he was fifty-two, his peers elected him the head of the Polish Society of Gynecologists and Obstetricians. Rokita, a prideful perfectionist, was known for upbraiding subordinates who made mistakes.

On March 8th, before Poland had any known cases of COVID-19, Rokita and his wife joined another couple on a skiing vacation in the Swiss Alps. At the ski resort, Rokita, who had helped establish guidelines for handling infected obstetric patients in the event of a coronavirus outbreak in Poland, frequently checked the news to monitor the infection's spread in Europe. Concerned that an outbreak in Switzerland was becoming acute, he drove his party home earlier than expected, returning to Kielce on March 11th. While they were away, Poland had reported its first case of COVID-19. Three days after he got home, the country shut its borders.

Because Rokita's job involved contact with patients, he got tested. The results took thirty hours to come back. In the meantime, he ran a few errands, including picking up his wife's car from a BMW repair shop. Later that day, he was informed that he was positive. He began quarantining at the hospital where he worked, and spoke to the regional office of the state health agency, giving it names of people with whom he had been in contact.

Echo Dnia, a tabloid, soon learned that the first patient in the region to test positive was a local doctor. The paper posted the news online, and within thirty minutes Rokita had been named in the comments section. One of the employees at the BMW dealership claimed that Rokita had not kept a safe distance from workers. The tabloid didn't mention that he had not received his test results at the time. Some nurses at Rokita's hospital told the paper that he had also dropped by his workplace, violating sanitary measures. Outraged comments proliferated, including from people who knew him personally. "I'm certainly not going to let this go just because—thank God—I didn't go to my appointment," a hospital worker who was also a private patient of Rokita's wrote, anonymously. "He could have consciously and deliberately infected me." She added, "I wonder how many women weren't as lucky as I was last week." Video surveillance showed no sign of Rokita's having been at the hospital before he started quarantining there. (The paper deleted the hospital worker's comments—eventually.)

A commenter on the *Echo Dnia* Web site said of Rokita, "Someone should spit in his face." Another wrote, "If he went skiing during the epidemic, and he's really a doctor, then I think he's a brainless moron." Rokita's cell phone was so overwhelmed by vitriolic calls that his family couldn't get through to him. They began to worry that someone would burn down their house.

On March 14th, Rokita, voluntarily confined inside the hospital, called *Echo Dnia* and begged for the harassment to stop. The editor told Rokita that limiting comments about him on the paper's Facebook page would only anger people more. According to his daughter Karolina, the editor tried to persuade Rokita to speak to one of the tabloid's reporters, so that his reputation could be restored; her father said that he would consider it. Two days later, the press reported seven hundred and thirty-four new suspected infections in Poland. Everyone was worried, and some people sensed a conspiracy. The next day, someone wrote on *Echo Dnia's* Facebook page, "Enough of this fucking collusion and sweeping things under the rug!"

Rokita tried to assure his family that the drama would soon blow over, but privately he was in agony. Karolina told me, "He was overwhelmed. Not only with the amount of hate comments, messages, phone calls he was receiving—even at 4 A.M.—but also with the fact that the attack came from people he knew and had helped in the past." Rokita was touched when an old friend texted him with a simple message: "How are you feeling?" Rokita wrote back, "I'm still alive."

That day, he FaceTimed Karolina from the hospital. She asked him if he was as sad as he looked. "I'm just tired," he said. "Very tired." That evening, his wife called his cell phone, but he didn't pick up. The next day, *Echo Dnia* reported that Rokita had killed himself. The newspaper got this information before the family did. An online commenter soon revealed that Rokita had died by hanging.

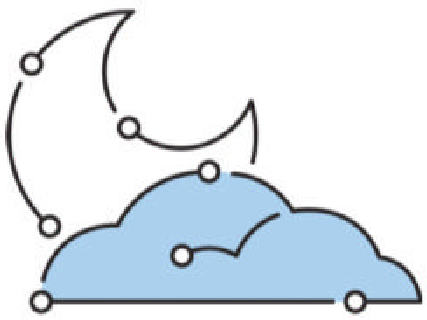
Karolina thinks that her father's act was intended to end the witch hunt against their family. She told me, "The same way we were scared for him, he was scared for us."

Eventually, even the fiercest shaming campaign dies down. Public interest fades, and painful tweets disappear from everybody's screens. Who still remembers such scandals as #PlaneBreakup or #CecilTheLion? Lawrence Garbuz was discharged from the hospital at the end of March. Since then, he has been at home, healing. When I called him, in July, he politely declined to talk about his experience. "I haven't Googled my name," he said. "Probably I don't want to." When I reached Nga Nguyen in London, she told me that she is willing to return to fashion shows when they resume, but added, "It's not my priority." She has been developing an environmentally responsible line of self-care products, and hopes "to launch by end of year." She told me that her sister had been "more traumatized," though Nhung's infamy is also fading. The Vietnamese journalist I spoke with said of Nhung, "People don't really care who she is anymore. There's a kind of rule that, after twenty or thirty days, people should shift their attention."

The Rokita family's pain has continued. According to Karolina, no funeral home would take her father's body. He was cremated, but hospital officials insisted that his family go to a location outside the city limits to take possession of his ashes, as if he had been a medieval leper. (A well-connected doctor persuaded the hospital to reconsider.) The *Echo Dnia* editor told me that he is sorry about Rokita's death, though he noted that there is no official explanation for the suicide, and said, "The editorial staff made every effort to minimize the impact of hate appearing in the comment sections." Yet, even after Rokita died, online posters continued to excoriate him. Some called his suicide a foolish overreaction. Three weeks after Rokita's death, the respected Warsaw broadsheet *Gazeta Wyborcza* published a sympathetic account of the family's ordeal, but even that story was greeted with nasty online responses. One poster felt that Rokita shouldn't have been bothered by all the online denunciations about him. "What interested him in the comments idiots were leaving?" another poster asked. "What a disaster!" This person speculated that Rokita must have had another reason for killing himself: "Maybe he took bribes and was afraid it would get out."

Nobody in Switzerland is known to have caught the virus from Rokita. His wife and the couple who travelled with them remained healthy. Officials in Kielce cannot trace a coronavirus infection to him. His wife initially had a positive test, but she didn't get sick, and a retest indicated that she was negative. Accordingly, Rokita's own test sample is being reëvaluated. The results have been delayed for months and Karolina suspects a coverup, to hide official incompetence. She points out that her father's COVID-19 test was the first performed in the region. Whereas Nhung and Garbuz almost certainly spread the disease, if unwittingly, Rokita evidently didn't spread it to anyone. It's possible that he never had COVID-19 at all.

On February 28th, Rijo Moncy, a twenty-six-year-old radiologist at a hospital in Italy, flew from Venice to Kochi, India, with his parents. (They were all born in India but have lived in Italy since Rijo was a child.)



In Kochi, the Moncys, instead of self-quarantining, immediately went out to visit friends and relatives. Soon afterward, an uncle fell ill, followed by Rijo Moncy and nine other family members. Moncy's ninety-three-year-old grandfather, with whom he shared a special bond, was among the infected.

After the family sought medical attention, their names were leaked to the Indian press. Trolls began attacking them online—with some calling for public floggings. The family were barraged with messages accusing them of deliberately bringing the virus from Italy. "The worst part wasn't the virus," Moncy told me. "It was the attacks on social networks." K. K. Shailaja, the provincial health minister in Kerala, denounced the family as "irresponsible." The Moncys took refuge in the Bible.

Moncy and his parents eventually went to a medical center in Pathanamthitta, and that's when things turned around. The hospital gave them good care, and they were not stigmatized. Moncy told the *Telegraph India*, "They gave us a cake, food packets . . . and some rations which we never expected from a government hospital." A nurse who treated others in the family caught the virus, but she didn't get angry about it. "This is our job," she said. Online, the trolls quieted down after Moncy apologized, in various media, for the family's mistakes. "We thanked everyone," he notes. "Even the people who had trolled us."

Within a month, all the family members had emerged from the hospital, including Moncy's grandfather—who, as the oldest person in India to recover from COVID-19, became a national hero. "He gave people courage," Moncy explained to me. In an interview with a national magazine, he said of his grandfather, "Thank God he lives in Kerala. Had he been in Italy or the United States, he would have been left to die."

Moncy has returned to Italy and gone back to work. He remains amazed that his shaming experience ended positively. Indians learned from his family's misadventure and grew more tolerant. "There was so much ignorance before," he told me. Shailaja, the health minister who had castigated them, contacted him after they were discharged. "She is a wonderful person, very smart," Moncy said. "She called us at home, to see how we were." The social-media attacks have ended. During the furor, Moncy told me, he had downloaded some of them onto his phone. "I have now erased them," he added. "So I can try to forget." ♦

THE POLITICAL SCENE

WHAT COMES NEXT

How Trump's forces could challenge the election results and turn the country into a battleground.

BY JEFFREY TOOBIN

The immediate aftermath of the Presidential election of 2000 has taken on the air of legend. On Election Night, news organizations first called Florida for Vice-President Al Gore—then, about two hours later, withdrew the call and, about four hours after that, declared that George W. Bush, the governor of Texas, had won the state, giving him enough electoral votes to become President. Gore called Bush to concede, and left his hotel in a motorcade to announce the end of his campaign to his supporters. His aides, learning that the race in Florida was, in fact, too close to call, tried frantically to contact the Vice-President in his limousine. They reached him just in time, and he telephoned Bush to retract the concession. Bush indignantly told Gore that his "little brother"—the governor of Florida, Jeb Bush—had said that he had won. "Let me explain something," Gore replied. "Your little brother is not the ultimate authority on this."

Like all historical events, the following thirty-five days can look, in retrospect, inevitable, even preordained. But they were a product of choice, improvisation, and happenstance. Gore demanded recounts in four Democratic-leaning counties, which began the painstaking process of studying their punch-card ballots and determining whether the tiny boxes known as chads had been fully detached. Bush responded by filing a lawsuit in federal court in Miami to stop the recounts. In one of the lesser-known events surrounding that case, James A. Baker III, Bush's lead strategist at the time, called John C. Danforth, the former Republican senator from Missouri and an ordained minister, who was famous for his rectitude. Baker wanted Danforth to be Bush's spokesman in the suit. Danforth was horrified. "Candidates don't sue," he told Baker. "You could ruin Governor Bush's career. He's only fifty-four years old, and the decision to file a court case like this would be a black mark that followed him forever. And it would destroy the reputation of everyone involved on the Bush side."

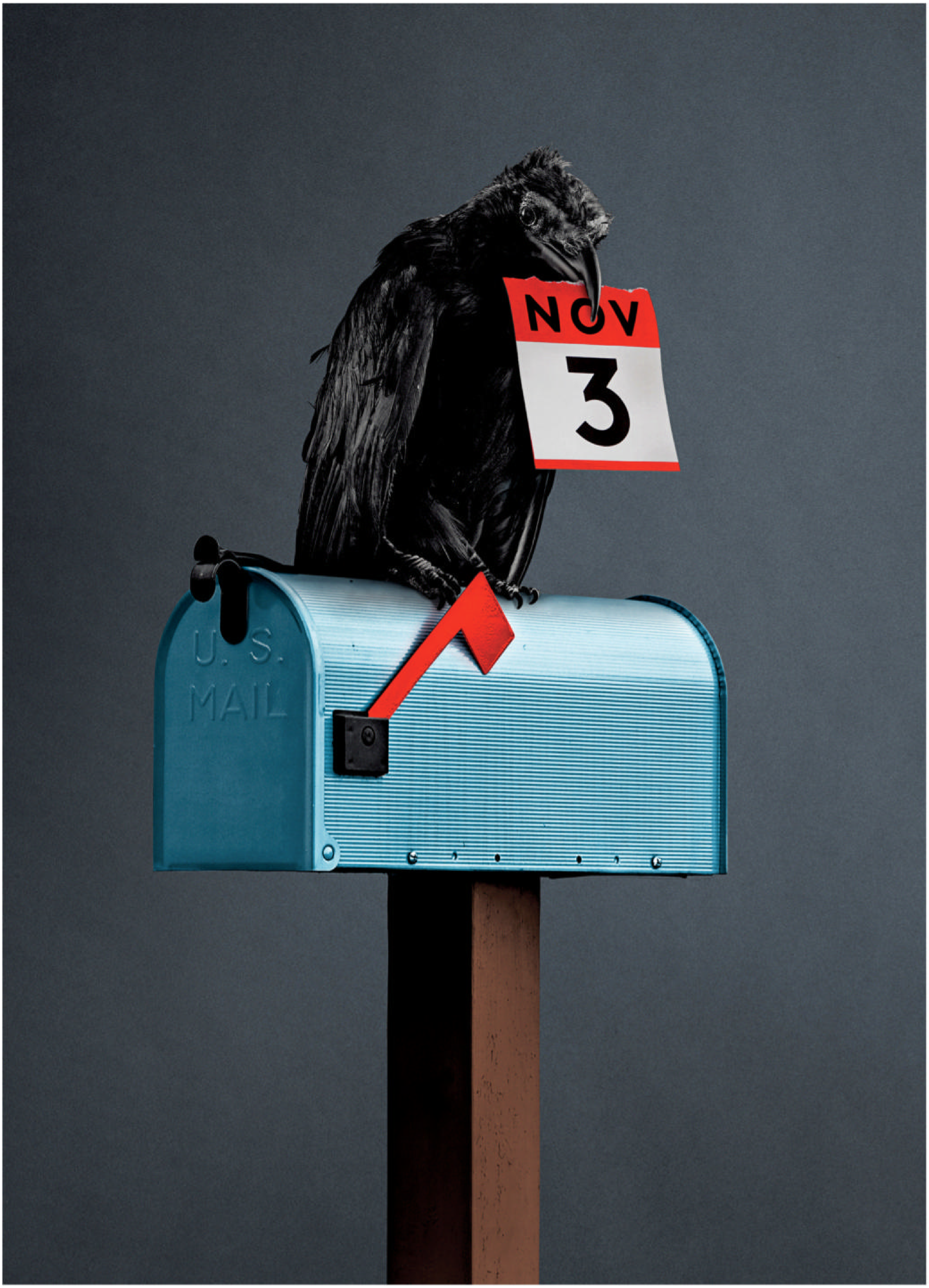
Danforth came from an era when political norms dictated a culture of deference to announced electoral outcomes. (Richard Nixon, reflecting these values, chose not to challenge the results of his narrow defeat in 1960.) Baker thanked Danforth for his time and proceeded to file that lawsuit and several others, mobilizing the Republican Party behind the efforts for the George Bush–Dick Cheney ticket. There were street protests outside the Vice-President's mansion ("Get out of Cheney's house!"), and a deployment of the finest political and legal talent in the Republican Party. Many of the lawyers working on the recount cases, far from suffering damage to their careers, were guaranteed political futures—they included John G. Roberts, Jr., whom Bush appointed to the Supreme Court, and Noel Francisco, who became President Trump's Solicitor General.

To the frustration of countless Democrats, Gore took a high-minded, traditional approach, asserting that the recount was a legal, not a political, process, and directing his supporters to stay off the streets. (Gore told the Reverend Jesse Jackson to call off protests that he had organized against the disenfranchisement of African-Americans in Florida.) In this spirit, Gore named the diplomat Warren Christopher, rather than a pol, to lead his recount efforts, and relied on a talented but small group of lawyers in Florida, who struggled to keep up with Republican reinforcements from around the country. The contrasts were cultural in addition to being substantive. David Boies, Gore's lead lawyer toward the end of the process, promenaded along the broad plazas of Tallahassee, bantering cheerfully with reporters and passersby. Benjamin Ginsberg, the general counsel to the Bush campaign and the dean of Republican election lawyers, paced the streets in a state of rage. "They are trying to steal this," Ginsberg said repeatedly, of the Democrats, color rising to the top of his bald head. In the end, Bush's resort to the courts proved to be his salvation. In the case known as Bush v. Gore, the Supreme Court, by a vote of five to four, held that the recounts violated Bush's rights, thus sealing his victory in Florida.

Ultimately, George Bush was declared the winner in Florida by five hundred and thirty-seven votes, out of some six million cast. The result might have been the same if Gore had chosen a more assertive strategy, but the parties' contrasting approaches—Republican aggression versus Democratic restraint—remain a crucial legacy of the contest. That year, the recount struggle came as a surprise to both candidates. This year, each side has mustered for a legal fight that began months ago and may well continue long after November 3rd. President Trump has ratcheted up the Bush strategy of total political warfare: he has already refused to commit to accepting the outcome of the election. "The only way we're going to lose this election is if the election is rigged—remember that," he said recently. "So we have to be very careful. . . . The only way they're going to win is that way. And we can't let that happen."

Democrats say that a strategy of reticence is a thing of the past. One Democratic veteran assured me that the Democratic Party of today is "totally different" from the Party of 2000: "Much less institutionally focussed, more ideologically grounded, and uncompromising. There is zero chance that anybody is going to say at some point that it's better for the country that we settle the matter now, give in, and then try to win in four years. No one thinks that another four years of Trump is survivable. The campaign believes this is an existential battle."

Compounding all this is the coronavirus pandemic, which will force dramatic changes in how voters cast their



This year, each side has mustered for a legal fight that began months ago and may well continue long after Election Day.

PHOTOGRAPHS: ZENA HOLLOWAY / GETTY (BIRD); NATHAN GRIFFITH / GETTY (MAILBOX)

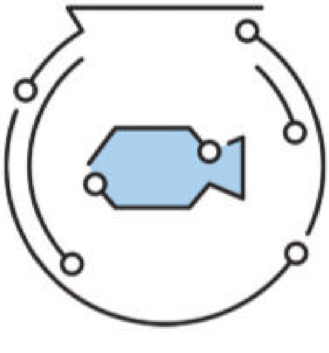
ILLUSTRATION BY TYLER COMRIE

ballots. The number of mail-in ballots will increase substantially: recent national polls suggest that about a third of all voters plan to vote by mail this year. Trump has assailed the practice of voting by mail, asserting without evidence that it is susceptible to fraud. In fact, Washington, Oregon, Colorado, and Utah have used universal mail-in voting—in which the state mails a ballot to each registered voter—for some time, including in previous Presidential elections, with few significant problems. There is no meaningful difference between absentee voting and mail-in voting, but Trump supports absentee voting, even using it himself. In early August, when he was signing his Florida absentee-ballot application, he said, "Absentee ballots are good. Universal mail-ins, when you get inundated with these things, are bad and will lead to terrible things, including voter fraud." More recently, Trump has spoken at length about the purported evils of universal mail-in voting. "They are sending out fifty-one million ballots to people that didn't ask for them," he said during an interview with Sean Hannity on Fox News, on the final night of the Democratic National Convention. "This will be the most fraudulent election in history. . . . It's just a horrible thing. It's going to be impossible to police." (It's unclear where Trump got that figure; at other times, he has used the figure of eighty million.)

Last month, the House of Representatives passed a bipartisan bill to provide an additional twenty-five billion dollars to the U.S. Postal Service, largely to insure that it could process the additional mailed ballots. Trump has vowed to veto the bill if it reaches him. "They need that money in order to make the post office work, so it can take all of these millions and millions of ballots," he said. "If we don't make a deal, that means they don't get the money. That means they can't have universal mail-in voting. They just can't have it." In recent weeks, he has also attacked the use of drop boxes, which allow voters to deposit their ballots before Election Day. He has claimed, without evidence, that they can be used to perpetrate electoral fraud.

Trump's grievance is almost certainly tied to the fact that Democrats are more likely to vote by mail in the upcoming election than Republicans are. This will contribute to a phenomenon called the "blue shift"—votes that are counted, and reported, later on tend to favor Democrats. This year's blue shift may be particularly dramatic. In a recent poll by Hawkfish, a data firm associated with Democrats, only nineteen per cent of Trump supporters said that they planned to vote by mail, compared with sixty-nine per cent of Biden supporters. Using data from late-summer polls, Hawkfish predicted that Election Night results could show Trump in the lead, with a total of four hundred and eight electoral votes. Four days later, with seventy-five per cent of the mail-in votes counted, Biden would take the lead, with two hundred and eighty electoral votes and, with all the votes counted, the former Vice-President would win the Presidency, with three hundred and thirty-four electoral votes.

Throughout the campaign, Trump has sought to undermine voters' faith in the democratic process—going so far as to suggest, on Twitter, that the election should be delayed until people could "properly, securely and safely" vote. (He later backtracked on the idea, which would require a change to federal law.) Last week, Trump tweeted, "the Nov 3rd election result may NEVER BE ACCURATELY DETERMINED." The norms of political conduct, already fading at the turn of the century, now seem to have disappeared altogether. As a result, the aftermath of the 2020 election has the potential to make 2000 look like a mere skirmish.



Democrats and Republicans have already filed dozens of lawsuits in attempts to define the rules in November—an overture for the battles that may follow the election. If Trump is the id of his campaign, its superego is Justin Riemer, the chief counsel of the Republican National Committee, who previously worked for the Virginia Board of Elections. Riemer eschews overstatement in favor of the careful words of a onetime bureaucrat. "We see what's going on as a systemic attack on the existing absentee-voting safeguards that are in place around the country," Riemer told me. "We acknowledge that there is going to be much more absentee voting, so it's never been more important to have those safeguards." In recent weeks, the Trump campaign has been sending questionnaires to election officials in swing states, asking for details about how they intend to conduct the election and count the votes. The officials' answers could become important evidence in any post-Election Day litigation.

The architect of the Democrats' pre-Election Day legal strategy is a Washington lawyer named Marc Elias. He is a partner at the firm Perkins Coie, the former professional home of Bob Bauer, who defined the role of the Democratic election specialist and served as the White House counsel under President Obama. Bauer is bearded and professorial; he now teaches at New York University School of Law and advises the Biden campaign. Elias, who relishes the combat of litigation, is more of a street fighter. He came to prominence in 2008 and 2009, when he represented Al Franken in an extended recount in a Minnesota Senate race. Franken eventually prevailed by three hundred and twelve votes, out of nearly three million cast. "That shaped my approach," Elias told me. "Everything you do in the voting process should shape what happens at the end, when the votes are counted." In light of the likely challenges to changes in vote totals after Election Day, the Biden campaign has established a legal task force, which includes hundreds of lawyers. It's led by Bauer and Dana Remus, the campaign's general counsel, and includes two recent Solicitors General in Democratic Administrations, Walter E. Dellinger III and Donald G. Verrilli, Jr.

Shortly after the pandemic broke out in the United States, in March, Elias, in a blog post titled "Four Pillars to Safeguard Vote by Mail," outlined the Democrats' approach:

> 1. Postage must be free or prepaid by the government.
> 2. Ballots postmarked on or before Election Day must count.
> 3. Signature matching laws need to be reformed to protect voters.

4. Community organizations should be permitted to help collect and deliver voted, sealed ballots.

To someone unversed in the arcana of election law, these demands may seem uncontroversial—but Riemer likes to frame each of Elias's pillars as an invitation for voter fraud. "Federal law says that Election Day is the first Tuesday after the first Monday in November, and we believe that's when the election ends," Riemer told me. "And the postmark rule is impractical." He believes that states should make their own decisions about postage-paid envelopes, and that election officials must compare the signatures on absentee ballots with those on voter-registration documents to insure that only eligible people vote and that no one votes twice.

"So, shall we start by talking about all the at-home workouts we've been pretending to do, or all the banana bread we've been baking for Instagram?"

Riemer also emphatically opposes the community collection of ballots—the practice by which campaigns or community groups gather absentee ballots from multiple voters and submit them together—known by Republicans as "ballot harvesting." It is true that community ballot collection, unlike Elias's other pillars, has been associated with voter fraud, if rarely. In a 2018 race in North Carolina's Ninth Congressional District, a Republican operative, according to investigators, filled in at least a thousand mail-in-ballot requests, many without the voters' knowledge. After the fraud was exposed, the state held the election again, several months later. Republicans often cite this past May's election for city council in Paterson, New Jersey, which led to charges of fraud for the misuse of mail-in ballots against several local officials. Trump tweeted, "So much time is taken talking about foreign influence, but the same people won't even discuss Mail-In election corruption. Look at Paterson, N.J. 20% of vote was corrupted!" At a news conference, Trump told reporters that they should look into Paterson, "where massive percentages of the vote was a fraud." The fraud involved several hundred votes; as in North Carolina, a judge ordered a new election.

Campaigns face a maddening variety of challenges as they try to change, or even fully understand, the rules of the road. The United States has arguably the most decentralized election administration of any advanced democracy. This is especially evident in the process for choosing a President. Each state conducts a separate contest for its electoral votes, with its own rules for casting and counting ballots. But there are approximately ten thousand five hundred different voting jurisdictions, many of which have their own distinctive procedures as well. The legal doctrine known as the Purcell principle, named for a Supreme Court case from 2006, holds that courts should refrain from making changes to election procedures close to Election Day, because of the potential for creating confusion for voters. (The court has never defined how close is too close.) As a result, the debates over Elias's four pillars, and also over universal mail-in voting, are being played out in state after state at a frantic pace.

Each party has created a Web site to track the progress of election litigation around the country. The Republican site, protectthevote.com, lists cases in nineteen states, and the Democratic site, democracydocket.com, lists cases in twenty-eight. By one accounting, there are now more than two hundred pending lawsuits about the rules for the November election. The claims in the lawsuits vary, but there are consistent themes. The Democrats are seeking both to make it easier to vote and to relax restrictions that prevent individual ballots from being counted. The Republicans are insisting on measures that they assert will limit the number of improper or fraudulent votes.

During the first week of August, Nevada's Democratic legislature and governor passed a substantial revision to the state's election law, effectively creating an all-mail contest in November. The Trump campaign sued. "Many of those provisions will undermine the November election's integrity," the suit asserted, in a hundred-and-fourteen-page complaint. "Some go beyond that, crossing the line that separates bad policy judgments from enactments that violate federal law or the United States Constitution." According to Trump's lawyers, the revised law "requires county or city clerks to count potentially fraudulent or invalid ballots, thereby diluting the votes of honest citizens and depriving them of their right to vote in violation of the Fourteenth Amendment." In response, Elias's team asserted that the Nevada legislature "has taken the necessary and appropriate steps to ensure that all Nevadans have safe and meaningful opportunities to vote, both during the pandemic and after." (The case is pending.) More recently, New Jersey made a similar move to offer all residents the opportunity to vote by mail, and Republicans sued to invalidate the new rules, again asserting that the system would lead to fraud. Phil Murphy, the state's Democratic governor, who initiated the change, said, of the Republican suit, "Bring it on." (This case is also pending.)

There are at least five ongoing cases in Pennsylvania, several of them Republican-backed efforts to restrict "ballot harvesting." But, even if limits are imposed, it is not clear how they would be enforced or what, exactly, they would be. Could family members drop off one another's ballots? What about distant family members? Close friends? How close? Who would monitor that process? Democrats have filed a suit in Pennsylvania to obtain prepaid postage for absentee ballots and to relax a postmark-date requirement. In another of the Pennsylvania cases, a Republican challenge to the vote-by-mail procedures, a federal judge, J. Nicholas Ranjan, told the plaintiffs, in effect, to put up or shut up—to produce evidence of fraud "in their possession, or if they have none, state as much." The Republican plaintiffs submitted a five-hundred-and-twenty-four-page filing that mentioned examples of fraud by voter intimidation at the polls and by the alteration of vote totals, but provided no examples of fraud in mail-in elections. (This case, too, is pending.) Last week, the Pennsylvania Supreme Court gave the Democrats an important victory, holding that the state should count all mailed-in votes that were postmarked by Election Day and permitting election officials to add more ballot drop boxes.

Some of the lawsuits involve relative minutiae. In Iowa, Republicans sued three counties that sent absentee-ballot applications to voters with their names and addresses already filled in. "We think voters should have to fill out that information themselves," Riemer told me. (The G.O.P. won that case.) Only a handful of the lawsuits appear to have been resolved. Rhode Island waived a requirement stipulating that voters obtain the signature of a witness in order to file an absentee ballot. Republicans challenged the change. Their case was rejected in federal district court and in the First Circuit Court of Appeals, and they failed to persuade the Supreme Court to review the judgment. But, even when the Republicans fail to win in court, their lawsuits succeed in raising issues that Trump and his allies may use to claim fraud in the event that the vote count ends with Biden in the lead.

"I can't tell whether you're gazing into my eyes or checking your e-mail."

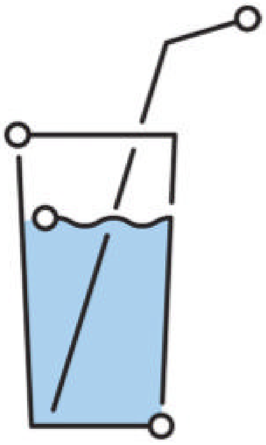
One of the ironies of the Republicans' obsession with fraud is that theirs is the party with the more significant recent history of misconduct at the polls. Shortly before the 1981 governor's race in New Jersey, the Republican National Committee created the National Ballot Security Task Force. The group consisted mostly of armed off-duty police officers hired by the G.O.P. to monitor polling sites in Black and Hispanic neighborhoods in Newark and Trenton. The group, whose members wore "NBST" armbands, posted large signs outside polling places that read "WARNING—THIS AREA IS BEING PATROLLED BY THE NATIONAL BALLOT SECURITY TASK FORCE. IT IS A CRIME TO FALSIFY A BALLOT OR TO VIOLATE ELECTION LAWS." The task-force members challenged the right of some people to vote and blocked the way to the polls for others. In the election, the Republican challenger, Thomas Kean, narrowly defeated the incumbent Democrat, James Florio.

The Democratic National Committee sued the R.N.C. for its role in creating the task force, and in 1982 the two sides settled the case with a so-called consent decree. The Republicans admitted no wrongdoing, but they agreed to refrain from engaging in tactics that suppressed the vote, especially those that affected minority voters. They also said they would not hire anyone to wear armbands at the polls and agreed to allow a federal court to review in advance any plans to conduct ballot-security operations at polling places. Over the years, the R.N.C. has attempted to have the consent decree lifted, arguing that it is obsolete and unnecessary, without success. Finally, in 2018, Judge John Michael Vazquez, over Democratic objections, lifted the decree.

The 2020 Presidential election will be the first in almost four decades in which Republicans will be free from the strictures of the consent decree. The Trump campaign and its allies have announced plans to hire fifty thousand poll watchers in fifteen states to monitor voting locations. Riemer told me, "The Democrats have had an unfair advantage for years because of the consent decree, and we're just trying to have a fair playing field. Our people will be well trained. They are not there to intimidate, they are not there to suppress the vote. They are there to get out the lawful vote." But the President has suggested that the Republican poll watchers will not necessarily be so restrained. Sean Hannity, in the interview during the Democratic Convention, asked him, "Are you going to have an ability to monitor, to avoid fraud and cross-check whether or not these are registered voters—whether or not there's been identification to know that it's a real vote from a real American?" Trump answered, "We're going to have everything. We're going to have sheriffs, and we're going to have law enforcement, and we're going to have, hopefully, U.S. Attorneys, and we're going to have everybody, and attorney generals." (The President has no authority over local officials.) Sherrilyn Ifill, the president and director-counsel of the N.A.A.C.P. Legal Defense and Education Fund, said, of the poll watchers, "We should prepare for widespread intimidation of voters at the polls and the use of dubious lists that challenge their eligibility to vote. This has long been a tool that has been recognized as a form of voter suppression. It's an utterly appalling message that no President should be sending out to the public."

In advance of the 2016 election, Roger Stone, Trump's longtime friend and adviser, organized a group called Stop the Steal, which was ostensibly intended to stop voter fraud at the polls. In response, Elias's team invoked the Ku Klux Klan Act of 1871, which prohibits private citizens from interfering with the right to vote, and won a court injunction against Stone's efforts. Elias doesn't rule out a similar lawsuit this fall. In addition, Democrats and nonpartisan civil-rights groups like Ifill's plan on being stationed at as many polling places as possible, to defend the rights of voters. In such a polarized environment, the presence at the polls of watchers with conflicting agendas presents one of the leading possibilities for conflict, if not violence, on Election Day.

Shortly after the polls close, states will begin releasing vote tallies, largely based on ballots cast at polling places. The news networks and the Associated Press are likely to be cautious about issuing projections of victory for one candidate or the other on Election Night. Instead, the vote-counting process could go on for days, if not weeks, under the constant gaze of partisans from both sides. According to Richard Hasen, a professor of law at the University of California, Irvine, "Representatives of the campaigns have the right to be present during every step. Every ballot has to be verified, every envelope has to be sealed, every voter identity checked, and the campaigns get to dispute every judgment that's made." Even if courts have clarified the procedures for casting and counting votes in each state and locality, the possibilities for disputes arising as those rules are applied to the actual ballots are nearly endless. How closely must the signature on an absentee ballot match that on the voter-registration form? What happens if a voter clearly indicates her intent—say, by circling a candidate's name—but fails to fill in the correct bubble on the form?



New York's Democratic primaries, on June 23rd—among the first major contested elections to take place during the pandemic—offered a modest preview of the chaos we could see after November 3rd. In those races, landslides were called quickly and without controversy. But the process of resolving the closer contests was long and agonizing. I observed one of them at a Board of Elections counting center, on West Thirty-first Street, in Manhattan. The main race still in dispute was the Democratic primary between Carolyn Maloney, the longtime representative from a district that includes the East Side of Manhattan and slivers of Brooklyn and Queens, and Suraj Patel, a young businessman and activist. Turnout was high for a primary. Patel had also challenged Maloney in 2018—about forty-four thousand people voted in that election. This year, the tally on Election Night put Maloney ahead by six hundred and forty-eight votes, 1.6 per cent, but more than sixty-five thousand votes had been cast by mail, and, two weeks later, none of those had yet been counted. In a typical pre-pandemic race in New York State, about ninety-five per cent of voters cast their ballots in person. This year, it is estimated that between forty and sixty per cent will vote by mail. (In Illinois, more than 1.1 million people had applied for absentee ballots by August; in 2018, only four hundred and thirty thousand people in the state voted absentee.)

The magnitude of the challenge for election officials was evident as soon as I entered the counting room, which took up most of the eighth floor of a large office building. There were about twenty counting tables, set at least six feet apart. Two board staffers sat at each table, and they were monitored by representatives from both campaigns; everyone was masked. At the tables, people tried to maintain social distance—mostly in vain, since they were all squinting at the same ballots. The staffers first compared the signatures on the envelopes with the ones in the registration book, and then inspected the ballots themselves. The pace was glacial. At first, staffers counted just two hundred ballots a day, though after a week or so the pace quickened to about eight hundred a day. Still, the initial count took more than a month.

New York, which is heavily Democratic, is unlikely to be competitive in the Presidential election, but there is every reason to believe that the count in the Maloney-Patel race will be simple and straightforward compared to what might happen around the country in the Presidential contest. Based on previous trends, at least twice as many people will vote in November as voted in the June primary; that means at least double the number of absentee ballots to count. In the case of a close race, a recount—in which each side could contest the validity of each ballot—would certainly go on for longer than the month-plus that it took for Maloney to declare victory.

As the New York race also demonstrated, mailed ballots have a markedly higher rate of disqualification. About twenty per cent of the ballots from Manhattan and Queens, and nearly thirty per cent of those from Brooklyn were disqualified—many because voters didn't sign the envelopes of the absentee ballots, or because they sealed the envelope with tape rather than with moisture. The Postal Service had failed to apply postmarks to many of the absentee ballots, so the Board of Elections disallowed all those that were received after Election Day. Patel successfully sued in federal court to have more ballots counted, especially those without postmarks. But by that point, in early August, Maloney's lead had grown to four per cent, and the Associated Press called the race for her. (Patel conceded on August 27th.) "The Democrats want to blame Trump and the Republicans for all the problems with voting, and claim that it's vote suppression," Samuel Issacharoff, a professor at New York University School of Law, told me. "But the Republicans had nothing to do with the fiasco in New York. The Democrats made all the rules there. There was no conspiracy—the system is just not set up to absorb that many absentee ballots and count them in a reasonable period of time."

The high disqualification rate for absentee ballots poses a special peril for Democrats. According to a study co-written by Daniel Smith, a professor at the University of Florida Law School, the mail-in ballots of racial and ethnic minorities, and also of young voters, were rejected at a substantially higher rate than those of older white voters across counties, even though the counties varied in the over-all rate at which they rejected ballots. High disqualification rates for mail-in votes were evident in 2020 races around the country. According to studies by the Washington *Post* and NPR, during the primaries, mailed ballots were disqualified at a far higher rate than in 2016—five hundred thousand in total were deemed invalid. (By comparison, about three hundred and eighteen thousand ballots were disqualified in the 2016 general election.) Franita Tolson, a professor at the U.S.C. Gould School of Law, told me, "You will still see many claims that absentee ballots have been wrongly rejected, and those will lead to court cases. The fact that we are generating lots of voting by mail will generate a lot of litigation."

Daniel Smith said, "Ultimately, in Florida, it may all come down to the three-member Canvassing Boards, who will decide whether each vote counts. This time, they won't be staring at chads but comparing signatures and deciding if they match."

In the days following Election Night, there is likely to be an increasing disparity between the initial poll tallies and the numbers that include mail-in votes. This is not exactly new. According to Edward B. Foley, a professor at the Ohio State University Moritz College of Law, for most of the twentieth century, the preliminary count on Election Night was about ninety-nine per cent of the total count, but, even before COVID, "a new normal developed, because of greater reliance on vote by mail." For example, on Election Night in 2018, the Republican Martha McSally led the Democrat Kyrsten Sinema by one per cent in the Arizona Senate race. But there were still about six hundred thousand votes to be counted, a quarter of the total number, and, once they were, it was clear that Sinema had won comfortably, by about fifty-five thousand votes. This year, with more mail-in votes, a blue shift is likely to take place in nearly every state.

Voters in nine states will get their ballots mailed to them directly by default, and thirty-six states will offer no-excuse absentee voting—that is, voters will be allowed to choose to vote by mail without having to give a reason. These include two major swing states, Pennsylvania and Michigan. In the past four Presidential elections, Foley explained, Pennsylvania experienced a blue shift of about twenty thousand votes: "That was before COVID and before the state moved to no-excuse absentee voting, so that means there will be a great deal more mail-in votes this year than in the past." (In the Pennsylvania Democratic primary, in June, which had a low turnout because the Presidential nomination had already been decided, it took more than two weeks to count the votes.)

There is nothing sinister about the fact that Democrats use mail-in voting more than Republicans do. Foley's concern is that Trump will claim that the blue shift, if it occurs, is evidence of partisan foul play, particularly if it elimi-

BEFORE THE RAISED EYEBROWS

before the raised eyebrows
    and the big
        tut-tut,

did any of you lot
    ever actually truly
        try burning a book? |

you have to *attend*,
    poker and stoke,
        make flames go leafing

page to page,
    drive oxygen into the gills
        till a sheaf

peels open
    exposing its sheets
        to the blaze,

get the parchments—
    wadded, involved—
        to surrender in turn

until the effacements
begin, before
the retractions of ink |

even then
some charred erratum
or index

floats off through the trees,
some ashen verse
or black-edged stanza

gets raked
from the layers of sludge
after rain |

how many books
did I burn? |
scores |

whose books? | whose books
did you burn? |
reader, I burnt yours

—*Simon Armitage*

nates an apparent Election Night lead in an important state. (Some Democrats have deemed a possible Trump lead on Election Night the "red mirage.") "If the votes keep shifting, Trump may demand that the Election Night numbers be certified, because he doesn't trust the mail-ins," Foley said. In 2018, after a blue shift narrowed the Election Night leads of Republican statewide candidates in Florida, Trump tweeted, "The Florida Election should be called in favor of Rick Scott and Ron DeSantis in that large numbers of new ballots showed up out of nowhere, and many ballots are missing or forged. An honest vote count is no longer possible—ballots massively infected. Must go with Election Night."

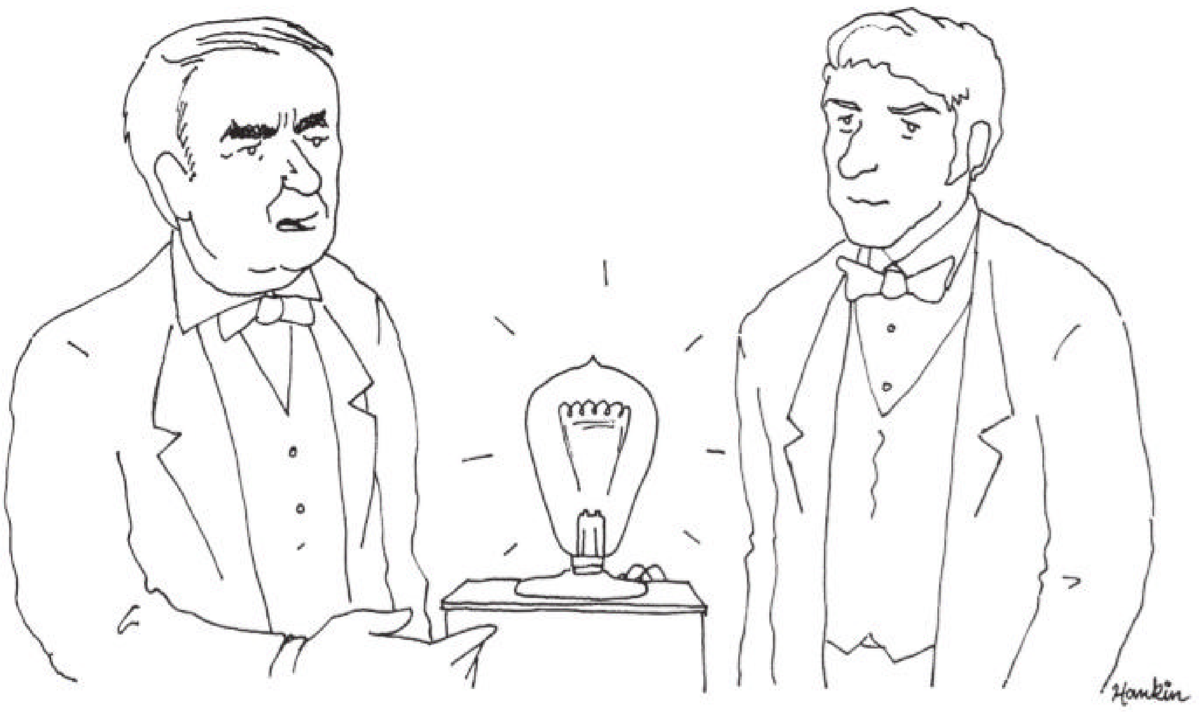
The prospect of a blue shift, and Trump's reaction to it, is one reason that Michael Bloomberg decided to spend a hundred million dollars to help Biden in Florida. "In swing states like Michigan, Pennsylvania, and Wisconsin, they count their Election Day votes first and then the mail-in votes, so it's entirely possible that Trump will be ahead there," Howard Wolfson, a senior political adviser to Bloomberg, told me. "Trump has no respect for decorum or tradition, so we assume that he will just claim victory at that point and argue that any ballots that come in after that point are fraudulent." Florida, on the other hand, counts mail-in votes as they arrive, so the Election Night total may well come close to the state's final result. Wolfson explained, "Florida is obviously very close, and it's a state that Trump really has to win to get to two hundred and seventy electoral votes. If we can show that he lost Florida on Election Night, it makes it pretty much impossible for him to claim victory in the election. That was a huge factor in why we decided to invest in Florida."

It took a Supreme Court ruling to conclude the Presidential race in 2000—and there is an additional set of procedures that may come into play in 2020. They have roots in an even more controversial Presidential election, which took place in 1876. That year, on the night of November 7th, it appeared that Samuel J. Tilden, the Democrat, had defeated Rutherford B. Hayes, the Republican. But the results in several Republican-dominated states had not yet been reported. The vote was especially close in Florida. Shortly before the Electoral College was to meet, in December, the Florida Canvassing Board certified electors pledged to Hayes, but the state's attorney general certified Tilden as the winner. Louisiana and South Carolina also sent contradictory certifications to Washington. Because neither candidate commanded a clear Electoral College majority, Congress improvised a solution, establishing an electoral commission of five senators, five House members, and five Justices of the Supreme Court. A few days before Inauguration Day, 1877, the commission voted eight to seven to award the Presidency to Hayes. Republicans like Hayes had established Reconstruction in the South after the Civil War, but, as part of the deal that made him President, Hayes agreed to end Reconstruction, with disastrous implications for African-Americans.

Foley told me, "Congress knew that what happened in 1876 was a disaster, an embarrassment, and then there were two more close elections, in 1880 and 1884, so they realized they really had to do something about it." As a result, Congress passed the Electoral Count Act of 1887, which purported to establish a procedure for resolving disputed Presidential elections. The statute was, Foley said, "a placeholder, better than nothing, which they figured would be improved over time. But Congress has never returned to the issue, and the law has never really been tested. No one really knows what it means."

There does seem to be general agreement on one provision of the 1887 act: the "safe harbor" clause. It provides that, if a state submits its final tally in the Presidential contest by six days before the meeting of the Electoral College, that decision is "conclusive" and thus free from legal challenge. This year, the safe-harbor deadline is December 8th; the Electoral College meets in each state capitol on December 14th.

It is unclear, however, what will happen if a slow vote count puts a state in jeopardy of missing the deadline. The Court's opinion in Bush v. Gore provides one possibility, based on Article II of the Constitution, which says that the states



"Someday, these will be installed in every home and business that wants to seem artsy."

• •

must appoint electors "in such Manner as the Legislature thereof may direct." In its Bush v. Gore opinion, the Court observed that, in the early days of the Republic, the state legislatures, not the voters, selected the Presidential electors in some states. Thus, the opinion went on, "the State, of course, after granting the franchise in the special context of Article II, can take back the power to appoint electors." The bland legal language obscures the magnitude of this conclusion. It means that a state legislature can simply ignore the votes cast by the state's citizens and award its Presidential electors to the candidate of its choice. "This is the most frightening prospect of all," Issacharoff said. "It's a deep confrontation with the idea that we as citizens have the right to vote for President."

In 2000, Republicans in the Florida legislature had been planning to invoke this constitutional provision if the length of the recount jeopardized the state's ability to submit electors in time to be counted. But, to date, no state in the modern era has attempted to preëmpt its voters in this way. Still, the Constitution can arguably be read to give legislatures the power to do so. It's even conceivable that, if President Trump claimed that a Biden victory in a state was based on fraud, a Republican legislature could overturn the result. If a legislature wanted to try this maneuver—to award its state's Electoral College votes on its own—could the governor veto it?

In four crucial swing states—Michigan, North Carolina, Pennsylvania, and Wisconsin—there is a Republican legislature and a Democratic governor. The Constitution speaks only of the legislature, and the answer appears to be that the governor would have no role—but no one knows for sure. The 1887 act also says that, after a state makes a "final ascertainment" of its results, the governor must send a certification to the Archivist of the United States. If the governor refused to do so—or sent a certification of a result that conflicted with the legislature's, or the courts', determination—would that action invalidate the certification by the legislature? No one knows. In any case, it appears clear that, if a state fails to submit a winner by December 14th, the decision about its electoral votes goes to Congress.

The 1887 act appears to offer some guidance on the question of what Congress might then do—but not much. "I defy you to read the law and understand it," Foley said. "I've been working on it for a decade, and I still don't understand it completely. It's just a morass." The law mandates that both Houses of Congress meet in a joint session—scheduled, this cycle, for January 6, 2021—to certify the Electoral College tally. At that meeting, there can be a challenge to the counting of votes if at least one representative and one senator offer it. At the joint session in 2001, several House members sought to challenge Bush's victory over Gore, but no senator joined them. Thus, Vice-President Gore, as the presiding officer, was obliged to rule the challenges to his defeat out of order. Michael Moore, in his documentary "Fahrenheit 9/11," included excerpts from the joint session, using the failure of even a single Democratic senator to challenge Bush's victory as a symbol of the Party's spinelessness.

So what happens if, unlike with the 2000 election, at least one senator joins a House member to challenge the electoral-vote results in a state? The law offers minimal guidance. One thing is clear: the House and the Senate would have separate proceedings, and vote separately, on which electors to seat in the contested states. With the result of the election on the line, the level of contention would be extraordinary. Would there be hearings? Would witnesses testify? How long would the House and the Senate debate the issue? No one knows.

The complexities accumulate. It's possible that some states, if their results are tied up in the courts, might not submit *any* electors to Congress. What happens if there are fewer than five hundred and thirty-eight electoral votes cast? As Charles Stewart III, a professor of political science at the Massachusetts Institute of Technology, said, "Do you need a majority of those cast, or do you need two hundred and seventy? That is not clear." And what if the House approves one slate of electors and the Senate approves a different one? Since Democrats now control the House and Republicans the Senate, such a scenario seems possible, even likely. According to Stewart, in the event of a conflict between the House and the Senate over which slate to approve, the Electoral Count Act says that the one signed by the governor of the state prevails. (If the Democrats retake the Senate in November, the chances of conflict between the House and Senate will be lessened, because this vote will occur after the third of the year, when the new senators will be seated.)

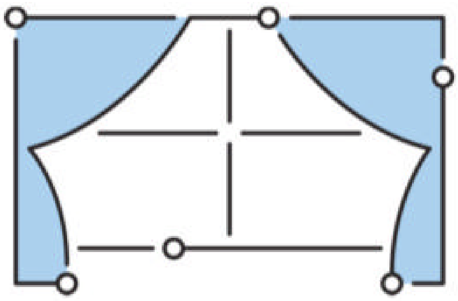
Another hypothetical: after the House and the Senate rule on the challenges, neither candidate obtains either two hundred and seventy electoral votes or a majority of those votes cast. Then the final decision would belong to the

House of Representatives. The vote in the House would take place not in the usual fashion, by members of Congress, but, rather, by delegation. In other words, each state would get one vote in the House, based on a majority vote of the members of the state's delegation. If it comes to this, the result seems clear. Republicans control twenty-six delegations in the House, and Democrats control twenty-three. Trump would win the election. “Sometimes, when I think about this stuff, I have to go take a nap, because it's so convoluted,” Stewart said.

Bob Bauer, the veteran Democratic lawyer, is not inclined to hysteria. “I don't portray the situation as a catastrophe, because all that does is scare away voters,” he said, of the upcoming election. “But it is true that it's an unparalleled challenge, because we have a frail election infrastructure in the best of circumstances, and now the pandemic is layered on top.” One of Bauer's concerns is outside the control of either campaign—that foreign powers would engage in cyberterrorism on Election Day and afterward. “There's a risk of cyber insecurity, with the possibility that foreign actors will try to interfere with the process,” he said. The specific possibilities include hacking into voter-registration databases and vote-counting software, and a full-fledged attack on the electric power grid. Bauer went on, “But there's a higher risk that they will try to convince people that they've interfered with the process and create confusion that way.”

There's an extreme imbalance in party resources when it comes to information about possible foreign interference, because the President controls the nation's intelligence apparatus. In a public statement on August 7th, the Office of the Director of National Intelligence asserted that China, Russia, and Iran were already attempting to interfere in the election. Russia's extensive efforts on Trump's behalf in 2016 have long been documented, and, according to the statement, they are continuing in 2020: “Russia is using a range of measures to primarily denigrate former Vice President Biden.” Other possible foreign efforts “seek to compromise our election infrastructure for a range of possible purposes, such as interfering with the voting process, stealing sensitive data, or calling into question the validity of the election results.”

Later that month, the Trump Administration shut down some access to information about these foreign efforts, asserting without evidence that there had been leaks in previous briefings. In a series of letters to congressional leaders on August 29th, John Ratcliffe, whom Trump recently named the director of National Intelligence, after his service as a Republican representative from Texas, announced that he would cease in-person briefings about “election security, foreign malign influence, and election interference,” and instead supply only written reports. Democrats were indignant about being unable to question intelligence officials before the election. “President Trump, through his hand-picked DNI—chosen for loyalty, not experience—is attempting to deprive Congress of the information they need to do their part,” Biden said in a statement. “There can be only one conclusion: President Trump is hoping Vladimir Putin will once more boost his candidacy and cover his horrific failures to lead our country through the multiple crises we are facing.” Last week, Ratcliffe reversed course and agreed to provide some in-person briefings to Congress, but Democrats will still head into the election substantially in the dark about how foreign powers may attempt to manipulate the outcome.



As Election Day approaches, the President has escalated his level of incitement. With the death of Supreme Court Justice Ruth Bader Ginsburg, last week, a battle with the Democrats in the Senate is almost inevitable. Trump has already moved from allegations of fraud to intimations of unlawfulness and violence. “Gotta be careful with those ballots,” he said on September 8th, in a speech in North Carolina. “Watch those ballots. I don't like it.” He continued, “Be poll watchers when you go there. Watch all the thieving and stealing and robbing they do.” Trump has advised his supporters to vote twice—once by absentee and once at the polls, to make sure their votes count. (This would be a crime.) He has expressed sympathy for the anti-Black Lives Matter counter-protesters who fired paintballs at their adversaries in Portland, and has defended Kyle Rittenhouse, the pro-Trump vigilante who is accused of killing two protesters in Kenosha, Wisconsin. Trump also retweeted a prediction that political unrest “could lead to ‘rise of citizen militias around the country.’ ” In light of these provocations, it seems that anything short of a landslide for either Biden or Trump could lead to chaos. It's unsurprising that, when the Transition Integrity Project, a group of a hundred bipartisan experts, ran a series of simulations, they concluded that “the potential for violent conflict is high, particularly since Trump encourages his supporters to take up arms.”

One Republican, perhaps the one most knowledgeable about how elections really work, has decided that Trump has gone too far. Earlier this month, Benjamin Ginsberg, the scourge of the Gore forces in Florida, wrote an op-ed in the Washington *Post*, calling out Trump's baseless provocations about the election. “I spent 38 years in the GOP's legal trenches,” he wrote. “I was part of the 1990s redistricting that ended 40 years of Democratic control and brought 30 years of GOP successes in Congress and state legislatures. I played a central role in the 2000 Florida recount and several dozen Senate, House and state contests.” Ginsberg denounced Trump's encouragement of double voting and rejected the President's claim of widespread voter fraud: “The truth is that after decades of looking for illegal voting, there's no proof of widespread fraud. . . . Elections are not rigged.”

Ginsberg told me, “I was a tough partisan and proud of it—but I think it's important for Republicans and Democrats to look at the real evidence of what's happened over forty years. Unfortunately, Republicans have gotten away from that during this cycle.” For decades, Republican candidates depended on Ginsberg for his counsel and his advice, but there is every sign that he, like all apostates from the cause of Trump, will be ignored and scorned by the President and his allies. Instead, it will be Trump's party that sets the path to Election Day, and beyond. ◆

ONWARD AND UPWARD WITH THE SCIENCES

THE TRASH NEBULA

Millions of man-made artifacts are circling Earth. Will one of them cause a disaster?

BY RAFFI KHATCHADOURIAN

For decades, the International Space Station has been hovering over Earth, in an orbit somewhere between two hundred and three hundred miles above sea level. Its massive rectilinear structure, resembling an Eisenhower-era TV antenna, contains hundreds of thousands of solar cells and a series of pressurized modules that can support life and equipment, all of it weighing close to a million pounds. Since 2000, people have been living on the station, in an area comparable to a six-bedroom house: humanity's most expensive real estate. The station is also the fastest structure a person can live in. It orbits the planet at more than seventeen thousand miles an hour, many times faster than the Earth's rotation. A day on the station, from sunrise to sunrise, lasts just ninety minutes.

In the early hours of July 16, 2015, members of the U.S. Air Force noticed an alarming development involving the I.S.S. Since the Cold War, the military has maintained an extensive space-surveillance network. Every minute, tracking stations across the globe relay a cascade of data to the Cheyenne Mountain Complex, in a bunker carved deep beneath two thousand feet of granite in Colorado. Some of the information is set aside for NORAD and other national-security organizations. Other portions are forwarded to the 18th Space Control Squadron, in California, which works to prevent collisions in the sky.

Sometime before three that morning, the surveillance network glimpsed a hunk of debris hurtling toward the I.S.S. A well-known piece of space trash, it had been labelled Object No. 36912 in an extensive inventory of orbital artifacts known as the NORAD catalogue. It had broken off of a Soviet military weather satellite, which was launched in 1979 from a Cold War facility near the Arctic Circle. The cylindrical satellite—resembling an old-fashioned boiler—was designed to work for less than two years. In the ensuing decades, it had been shedding fragments. That April, another piece of it had threatened the space station.

Object No. 36912 was likely a torn-off piece of thermal shielding; it appeared to be relatively light, and no bigger than a large dinner plate. For years, it had circled safely above the I.S.S. But its mass and shape made it highly sensitive to atmospheric drag—its orbit shifting dramatically as the atmosphere expanded and contracted in response to solar activity. Several weeks earlier, the atmosphere had ballooned, causing Object No. 36912's orbit to suddenly decay.

As the debris spiralled downward, gathering speed, the Air Force was keeping a close watch, but small things in space can easily evade detection. The object was visible to just two radar stations, in Alaska and in Florida—and then it went entirely dark for more than a week. On July 16th, when it reappeared, Air Force analysts quickly updated their predictions: the object would make a close pass of the space station at 5:29 A.M. (Mission Control time, in Houston). It would clear the spacecraft by about fourteen miles, but penetrate a safety zone around the I.S.S. called "the box." Then it would loop around the globe, falling farther, and come within striking distance—risking impact, or a "conjunction." If the chance that something in the box will collide with the I.S.S. is greater than one in ten thousand, the condition is "red." With Object No. 36912, the probability was more than one in a thousand.

At 2:44 A.M., the Space Control Squadron notified Jim Cooney, the I.S.S.'s trajectory-operations officer. Cooney, a NASA veteran, was asleep at home, but an app on his phone triggers a high-volume alarm for such alerts. "Your brain gets engaged really fast," he told me. He had become accustomed to late-night calls. Only a month earlier, NASA had adjusted the spacecraft's trajectory to dodge a fragment of a Minotaur rocket: a former intercontinental ballistic missile repurposed to ferry cargo into space.

These maneuvers have been performed more than two dozen times, and can be executed without much trouble if Houston has five and a half hours' notice. But, when Cooney called the Air Force, he learned that Object No. 36912 would make its closest approach in about four hours. "I had them repeat the information to make sure I was doing the math right," he recalled. Never before had the I.S.S. faced such a high probability of collision on such short notice. Moving the station was out of the question.

Instantly, he relayed the news to Houston's flight director, Ed Van Cise, and then rushed to Mission Control, where he joined a tense meeting to discuss the options. There was only one: instruct the crew to lock down the station—closing hatches between modules—and then shelter in the Soyuz capsule, a Russian vessel that can serve as a lifeboat. There were three people aboard the I.S.S.: one American, Scott Kelly, and two Russians, Gennady Padalka and Mikhail Kornienko. In the Soyuz, they could detach from the failing structure and return to Earth. In the station's history, its crew had sheltered in the Soyuz only three other times.

Van Cise reached out to Kelly, who was exercising on a treadmill mounted on one of the station's walls. "Houston on Space to Ground Two," a voice barked, announcing the call. "We are privatizing." This meant that the feed from Mission Control, which usually could be accessed freely by the ground crew, would be nonpublic. Kelly later wrote in an expedition log that his first thought was, "Oh, fuck." In space, unscheduled private conversations portend bad news: in 2011, on an earlier mission, Houston had privatized the

Defunct satellites career around the planet as ballistic junk, shedding fragments and sometimes smashing into one another.

ILLUSTRATION BY TODD ST. JOHN

channel to inform him that his sister-in-law, the Arizona congresswoman Gabby Giffords, had been shot.

Hearing that the call was for NASA business, he was at first relieved. Then the enormity of the situation sank in. Fuck, he thought again. The privatized call was a courtesy, so that Kelly would be prepared once the alert was relayed publicly. The space station operates on Greenwich Mean Time; for the crew, the moment that Object No. 36912 either slammed into the structure or zoomed past it would be 12:01. Mission Control instructed Kelly to start closing hatches at 10:30 A.M., then retreat with the Russians to the Soyuz at 11:51, and stay there until notified. Kelly cut short his workout.

At ten o'clock, Mission Control contacted Kelly again, to remind him that he and Kornienko had an interview scheduled with morning news programs in Florida and Kentucky. NASA reasoned that there was time to proceed: the interview would take less than twenty minutes, and lockdown was in half an hour. "Seriously?" Kelly wrote in his log. "We have a satellite coming at us." But he and Kornienko got into their positions without protest. "We are ready for the event," Kelly said, dryly, and glanced at his watch. Then he answered questions about the Kentucky Derby, performed zero-gravity stunts, and tried not to show that he was in a life-threatening situation.

As soon as the transmissions ended, Kelly began locking down hatches throughout the American modules. Calmly, he floated through the structure—the lab, the cupola, an air lock—with a flashlight in his mouth, to augment the station's dim lighting. He had asked Houston if the debris hurtling toward the space station would be visible; as he closed the hatches, he got a response. "It will be in orbital night," Houston told him. "So, no viewing opportunity."

"How about relative velocity?" Kelly asked.

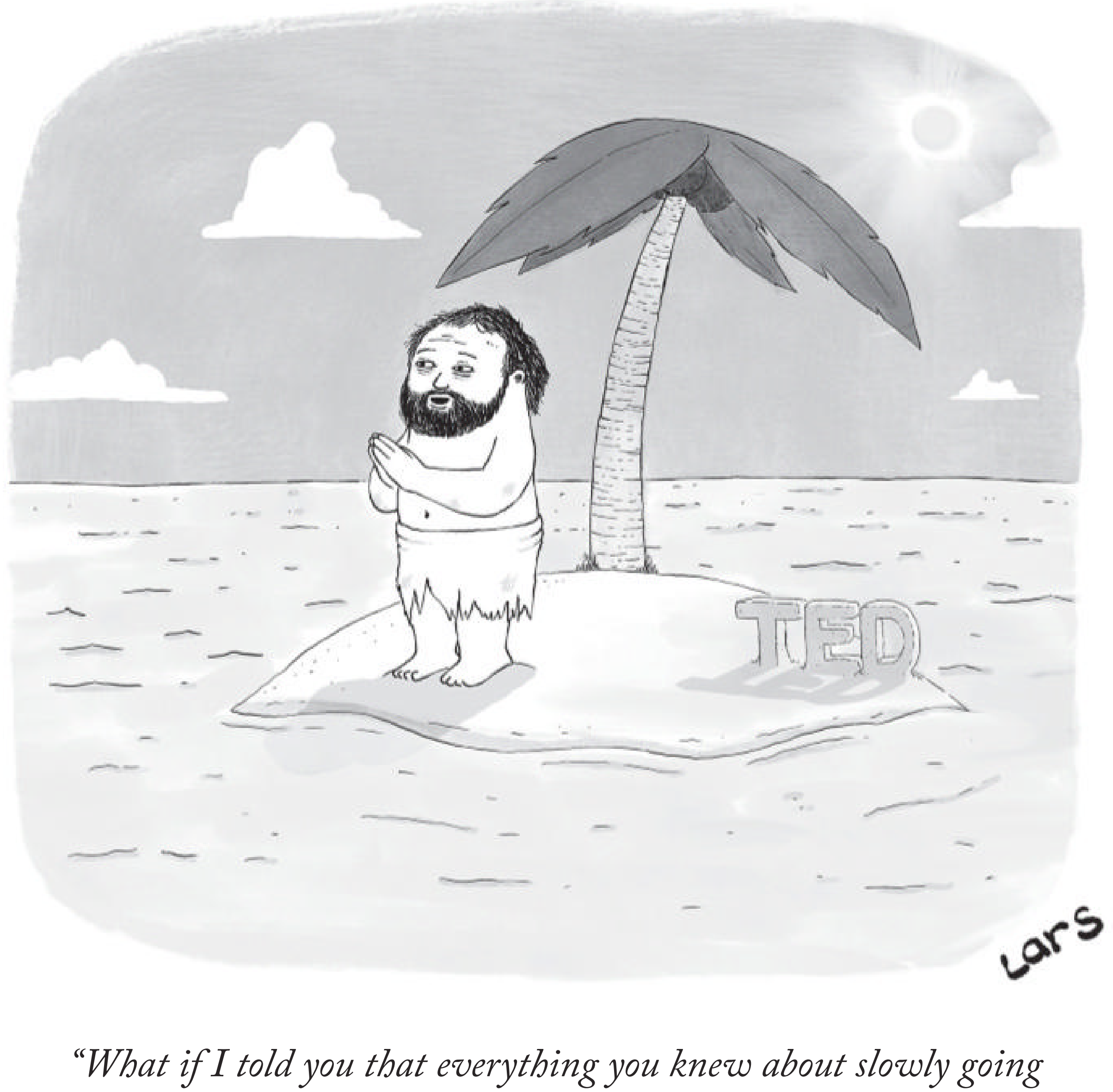
"Fourteen kilometres per second."

"Copy," Kelly said, plainly, but the number was terrifying: the debris and the station were closing in on each other at a combined speed of thirty-one thousand miles an hour. In orbit, a one-centimetre bolt can have the explosive force of a hand grenade upon impact. Object No. 36912 was at least ten times larger. When the space station's shielding was being designed, a NASA astrophysicist named Donald Kessler had asked experts to shoot small objects at metal film cannisters at hypervelocities. The ballistics revealed that, even if debris penetrated the I.S.S. cleanly, it could leave a mangled hole upon exit. Object No. 36912 risked triggering a chain of failures that could destroy the entire structure.

Kelly focussed on procedure. Houston had told him to pick up a scientific instrument and a medical kit. He got those, and also some personal items, thinking of an American astronaut, Mike Foale, who had served on the Mir space station, in 1997. Foale had been living in a module called Spektr when a supply ship came in too quickly—like a shark, a cosmonaut onboard recalled, "this black body covered in spots sliding past"—and then smashed into it. To contain the breach, Spektr was sealed, forever separating Foale from his things, including gold pendants he intended to give his wife and children. "You always think about what happened to him when you're closing a hatch with important stuff on the other side," Kelly told me.

After locking down the American modules, Kelly caught up with Kornienko and Padalka in the Russian section. Padalka, the commander of the I.S.S., strove to project confidence; when Moscow Mission Control had asked him about the mood onboard, he responded, "Fighting spirit!" Kelly noticed that none of the hatches on the five Russian modules were shut. (Padalka and Kornienko say that they remember this differently.) "The Russians don't close their hatches like we do," Kelly wrote in his log. "They think it's a waste of time—basically thinking the two most likely scenarios are the thing misses, or catastrophic destruction. The stuff in-between is way too unlikely to care about."

Kelly was amazed to find the cosmonauts having lunch. "We wanted to eat!" Kornienko told me. "Russians have a proverb, 'War is war, but lunch runs on time.'" The Soyuz's food supply was limited to three days, and who knew how long they might be stranded there?



"What if I told you that everything you knew about slowly going insane on a desert island was wrong?"

There were fourteen minutes to spare, so Kelly joined them for a can of Appetizing Appetizer—a dish that, he later recalled, resembled cat food, "in appearance, consistency, and probably a little bit in taste."

In Houston, the crew at Mission Control waited tensely. A wall-size screen contained a depiction of the space station's orbit and a live feed of its interior. Ed Van Cise fidgeted with a computer mouse. One NASA official stared at a monitor with a hand over his mouth. Another sat with an emergency manual open; he told me, "We know what to do, but we don't know what the outcome is going to be. This could be terrible, this could be a loss of life."

At 11:51, the three men in the space station climbed into the Soyuz capsule, a cramped vessel that looked like a pinched cylinder atop the station. It was packed with switches and knobs. "It's dark outside, so it's darker than normal inside," Kelly wrote in his log. "It's cold." He was wearing a black NASA sweatshirt, and he had pulled the hood down nearly over his eyes.

The men were instructed to leave the Soyuz hatch sealed, but unlatched—in case the debris hit the capsule rather than the I.S.S. and they needed to rush back in. Kornienko focussed on the latch, imagining the steps he would take in a crisis. "There were no words—*silence*," he told me. Kelly, too, was struck by the sudden quiet, as each man retreated into his thoughts. He wrote in his log, "I can only hear the sounds of the fans inside the Soyuz, my breathing."

With the tension growing, Padalka said, "You know, it will really suck if we get hit."

"*Da*," Kornienko said. "Will suck."

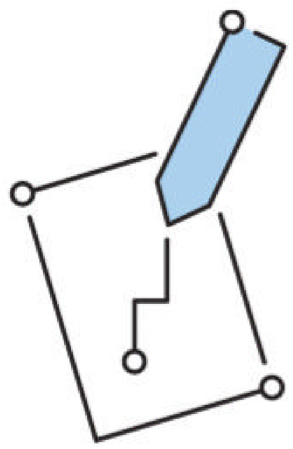
A monitor indicated the time, and the men watched the minutes elapse, bracing for 12:01. Kelly noticed Kornienko gazing out a porthole. "Finally, I said, 'Misha, you're not going to see *anything*,' " he recalled. " 'That thing is going thirty thousand miles an hour, and it's dark outside!' Then I noticed that *I* was looking out the window, and listening, and tensing out, and then at some point you realize, *We wouldn't even fucking know if we got hit. We just would've been vaporized!*"

The three men fell into silence again. For a while, Kelly listened to his iPod. "As the time approached twelve noon and some odd number of seconds I started to grimace," Kelly wrote. "Thirty seconds go by. A minute." At 12:01, nothing happened. Padalka got on the radio. "Moscow," he said. "Do you read?"

"Loud and clear. How are things?"

"We're getting into 12:02," Padalka said. "Everything is very quiet up here." After nearly three tense minutes of radio silence, Padalka called in again: "Moscow, do we keep waiting?"

The radio crackled. "That's all," it finally said. Object No. 36912 had blown past the station. Later, the Air Force put its distance at less than a mile and a half—a gap it could have closed faster than the blink of an eye. Three weeks later, it incinerated in the atmosphere.



In the fourteen billion years between the big bang and the autumn of 1957, space was pristine. Then came Objects No. 1 and 2 in the NORAD catalogue: Sputnik 1—a polished orb of aluminum alloy with four long prongs—and the rocket that the Soviet Union had used to launch it, ushering in the space age. Sputnik circled the planet in an elliptical orbit, but at an altitude so low that atmospheric drag brought it down within three months. The following year, NASA launched Object No. 4, Vanguard 1, farther out into space, but then lost contact with it. Adrift since 1964, it still circles the planet. At the apex of the Cold War, Sputnik and Vanguard were triumphant emblems of a bold future. Today, they are emblems of junk.

Since 1957, humanity has placed nearly ten thousand satellites into the sky. All but twenty-seven hundred are now defunct or destroyed. Collectively, they cost billions of dollars, but they were launched with the understanding that they were cheaper to abandon than to sustain. Some, like Sputnik, have burned up. Thousands, like Vanguard, will stay in orbit for decades or centuries, careering around the planet as ballistic garbage: a hazard to astronauts and unmanned spacecraft alike.

These satellites are joined by thousands of spent rocket bodies and countless smaller items—space flotsam created by wear or collision or explosions: things like bolts and other bits of metal. There are odder specimens, too. Object No. 43205 is a functional Tesla Roadster (with a mannequin driver) that Elon Musk launched in 2018. A company called Celestis fires capsules loaded with human remains into orbit, where they will stay for nearly two and a half centuries. (The ashes of Gene Roddenberry, the creator of "Star Trek," were sent aloft in Object No. 24779.) For years, Space Shuttles emptied their septic systems during missions: astronaut urine, instantly transformed into glimmering snowflake clouds, is reputed to be among the more beautiful visions in space. In 2007, a shuttle jettisoned a fourteen-thousand-pound tank of ammonia. (It later burned up over the South Pacific.) Astronauts, too, have accidentally let objects fall into orbit during space walks: a camera, a spatula, a glove, a mirror, a bag filled with a hundred thousand dollars' worth of tools.

Small or large, personal or industrial—retrieving anything from space is immensely difficult, and has been done on just a handful of occasions. The military tracks about twenty-six thousand artifacts orbiting Earth, but its catalogue recognizes only objects larger than ten centimetres; the total number is much greater. By one estimate, there are a hundred million bits of debris that are a millimetre in size, a hundred trillion as small as a micron. We live in a corona of trash.

The first person to apprehend that space pollution posed a strange form of high-speed environmental damage was Don Kessler, the NASA astrophysicist who had helped assess the International Space Station's vulnerability to debris. From his earliest calculations, the stakes were clear: the problem, if ignored, could destroy all the satellites that orbit near the Earth—a loss that would be more acutely felt as humanity increasingly relied on space. Communication systems would fail; scientific instruments—to study climate, or pandemics, say—would become inoperable. The losses could be measured in billions of dollars, and perhaps in lives, too.

For Kessler, space was a childhood

passion. When he was growing up, in Texas, his father bought him a telescope to gaze at the stars, and he never lost interest. After high school, Kessler enlisted in the Army, and served in the Air Defense Command. In 1962, he enrolled at the University of Houston to study physics. Genial, confident, and mathematically adept, Kessler quickly found his way to the frontier of space research. Before graduating from college, he began working at NASA, through a program that allowed students to split their time between classes and the agency. "He was brilliant," Darren McKnight, an aerospace engineer who has collaborated on research with Kessler, told me. "He could take a very complex problem and go, 'Huh, it's inversely proportional. It's not that complicated.'"

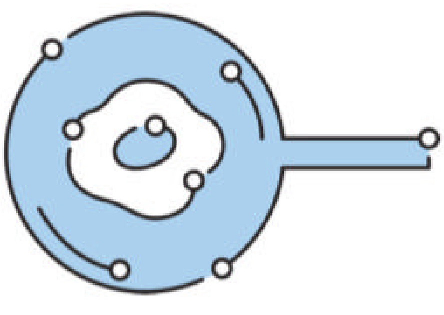
In those years, the Apollo program had achieved a run of successful suborbital flights and was advancing toward a lunar mission. Kessler told me, "They said, 'We're going to Mars after this, and we're going through a trajectory that's going to take us into the asteroid belt.'" Although he was still a student, NASA asked him to research the environment between Earth and Mars, to understand how a spacecraft could journey through giant clusters of rocks that were continually smashing into one another.

Kessler spent five years thinking about asteroids, using statistics to represent the effects of their colliding and fragmenting; his work became NASA's official meteoroid model for interplanetary space. But he wanted to go further. By the nineteen-seventies, humanity had launched more than three thousand satellites—which, like space rocks, could eventually collide and fragment. "It was just a matter of when," he said. Kessler suspected that his models would illuminate these dangers, but he was unable to pursue the research. Amid agency-wide budget cuts, NASA dissolved his department, reasoning that its work was done.

Kessler became a flight controller for Skylab—an American space station that NASA had launched in 1973. Then he was assigned to the Johnson Space Center's Environmental Effects Office, to study the impact of Space Shuttles on Earth's atmosphere. He didn't love the work. He was in his thirties, still trying to find his place.

In the mid-seventies, with the country racked by an energy crisis, the director of the Johnson Space Center, Christopher Columbus Kraft, decided that the agency should pursue an ambitious new mission: launch dozens of gigantic solar-power stations into orbit, where they would harvest the sun's energy and then send it to Earth in microwave beams. Strong-willed and bold, Kraft was so integral to the creation of America's space program that Neil Armstrong once called him the "control" in Mission Control. His new vision would require space engineering on an unprecedented scale: each of the orbiting power stations would have to be constructed from millions of tons of material. Even if they could be built, no one knew whether the high-energy microwaves were safe. Kessler told me, "They were concerned about what the beam would do to the ozone layer, to birds—or even to people who happened to be near it coming down."

The head of the Environmental Effects Office asked Kessler to conduct an assessment of the space-based power stations. Kessler had no interest in the effects of beams zapping Earth—but he saw in the project a chance to return to his earlier research. He proposed modelling the effects of a power station breaking apart in orbit, arguing that it could threaten Space Shuttle missions. "That was my excuse," he told me. "It really did get their attention."



Throwing himself into the work, Kessler discovered that the prevailing attitude about orbital debris at NASA was based on a mistaken assumption—that the only artifacts worth worrying about were in the NORAD catalogue. Analysts preparing for the first Apollo mission had decided that smaller fragments were so trivial that they could be "neglected in the calculation of collision probability." Debris was not an environmental problem. It was a traffic problem. You just needed to avoid what had been documented.

Having studied the way asteroids slammed into one another, Kessler knew that very small objects were far from negligible. Even a minuscule shard could smash a satellite to pieces, dispersing more high-velocity debris. If the population of objects became dense enough, collisions would trigger one another in an unstoppable cascade. The fragments would grow smaller, more numerous, more uniform in direction, resembling a maelstrom of sand—a nightmare scenario that became known as the Kessler syndrome. At some point, the process would render all of near-Earth space unusable. Theoretically, Kessler mused, our planet could acquire a ring akin to Saturn's, but made of garbage.

In 1976, Kessler wrote up an "internal note" that explored three scenarios, based on various rates at which satellites were launched: conservative, realistic, and worst-case. In the realistic scenario, he speculated, the runaway collisions would begin in fifteen years, and by 2020 would cause certain altitudes to be so hazardous that a power station would not survive a decade. In the worst case, based on the assumption that the collisions were already cascading, the debris environment would be ten times that bad by 2020; within two centuries "all tracked objects would be completely destroyed and space would be filled with millions of fragments."

Kraft dismissed the report as too theoretical; although Kessler's predictions drew upon some old experimental data, they relied mostly on math. Undeterred, Kessler searched for more data. "All of my management said, 'You're supposed to be doing other things—what are you doing this for?'" he told me. When he learned that an Air Force radar station in North Dakota had briefly been recalibrated to take more sensitive readings, he reached out, and discovered a large uncatalogued population of debris. With a NASA colleague, Burt Cour-Palais, he sharpened his predictions—arguing that the flotsam could quickly pose a greater danger than meteoroids. Still, after another presentation to Kraft, he was instructed to spend no more than ten per cent of

SPOILER

Can you diagnose fear? The red tree blooming from uterus
to throat. *It's one long nerve*, the doctor says. There's a reason
breathing helps, the muscles slackening like a dead marriage.
Mine are simple things. Food poisoning in Paris. Hospital lobbies.
My husband laughing in another room. (The door closed.)
For days, I cradle my breast and worry the cyst like a bead.
There's nothing to pray away. The tree loves her cutter.
The nightmares have stopped, I tell the doctor. I know why.
They stopped because I baptized them. This is how my mother
and I speak of dying—the thing you turn away by letting in.
I'm tired of April. It's killed our matriarchs and, in the back yard,
I've planted an olive sapling in the wrong soil. There is a droopiness
to the branches that reminds me of my friend, the one who calls
to ask what's the point, or the patients who come to me, swarmed
with misery and astonishment, their hearts like newborns after
the first needle. What now, they all want to know. What now.
I imagine it like a beach. There is a magnificent sand castle
that has taken years to build. A row of pink seashells for gables,
rooms of pebble and driftwood. This is your life. Then comes the affair,
nagging bloodwork, a freeway pileup. The tide moves in.
The water eats your work like a drove of wild birds. There is debris.
A tatter of sea grass and blood from where you scratched your own arm
trying to fight the current. It might not happen for a long time,
but one day you run your fingers through the sand again, scoop a fistful out,
and pat it into a new floor. You can believe in anything, so why not believe
this will last? The seashell rafter like eyes in the gloaming.
I'm here to tell you the tide will never stop coming in.
I'm here to tell you whatever you build will be ruined, so make it beautiful.

—*Hala Alyan*

his workday on the research. The head of the Environmental Effects Office took to muttering, "Kessler and his damn debris!"

Then, in 1978, a Soviet intelligence satellite, called Kosmos 954, fell from the sky. It was nuclear-powered, with a reactor core containing more than sixty pounds of enriched uranium. Breaking up over remote northwestern Canada, Kosmos 954 scattered radioactive wreckage for hundreds of miles. Recovery crews dressed in hazmat suits, working in extreme conditions—in some places colder than forty degrees below zero—struggled to reclaim it.

Kosmos 954's breakup became an international incident, prompting officials from around the world to scramble for information about derelict satellites. Suddenly, the Secretary of State was speaking about hazards in space. An expert on nuclear warfare, testifying before Congress, described Kessler's predictions as "chilling." United Nations officials, suspecting that Kosmos 954 had collided with something in orbit, sought Kessler out. Burt Cour-Palais reported that NASA had brought up their research at the SALT II negotiations with the Soviets. "Our work has hit pay dirt," he said.

Kessler decided that he would have to work on the project either fully or not at all. He insisted on meeting with Kraft, who invited him to make another presentation. Looming over the meeting was the impending fate of Skylab—then the largest structure in space, and by that time derelict for years. "We had abandoned Skylab without a full appreciation of what that meant," one of Kessler's superiors later recalled. It was only a matter of time before Skylab, like Kosmos 954, came crashing back to Earth or was hit by something and splintered into pieces. Already, the rocket that launched it had smashed into the Atlantic.

When Kessler arrived at the meeting, he found it packed with NASA V.I.P.s, including officials who had objected to his research. He was convinced that his career was on the line, but, he told me, "I knew I had a story to tell." Determined to offer pragmatic solutions, he explained that he had discovered that the largest source of debris at the time was spent Delta rockets, which were exploding in orbit, often long after they were "presumed dead." A simple design change would prevent the explosions. "The solution was not to spend less time in space," he recalled. "It was to do it more responsibly."

Kraft became a convert. "We would be crazy not to continue!" he told Kessler, vowing to obtain funding for a full-time study of the problem. "Go do it," he declared. "Forthwith!"

Three months later, Skylab was hurtling downward over the Indian Ocean—"a blue fireball in the starry predawn sky," according to a NASA history. The fireball then turned red-orange and splintered into five pieces. Early risers in southwestern Australia saw the blazing fragments; in Perth, they rattled windows with a sonic boom. The disintegrating machine rained tons of debris across the outback. No one was hurt. But one town, the Shire of Esperance, later issued NASA a littering ticket with a four-hundred-dollar fine.

The universe may be infinite—a "big sky," as some NASA officials have described it—but even an endless amount of space is too small if you can occupy only a tiny bit of it. Kessler knew that the most worrisome region was the closest one: low Earth orbit, or LEO, which extends to about twelve hundred miles above sea level. At the bottom of LEO, where gravity holds together a semblance of sky, the atmosphere is thick enough to cause circling objects to lose energy and return to Earth quickly, a self-cleaning process that keeps the density of debris low; the International Space Station is kept there, in part for safety. About four hundred miles above the Earth, the exosphere begins. The atmosphere there is so thin that molecules can circle the planet without colliding with one another. This part of LEO is an engineering sweet spot: far enough from Earth that keeping a satellite in orbit requires no energy, but close enough that the cost of shielding against solar radiation and powering communication systems is relatively low.

With a budget of just seventy thousand dollars, Kessler pulled together a scrappy team: five specialists who agreed to help him, part time, to study LEO's growing congestion. They became space detectives, piecing together clues from the kinetic, chaotic world above. To measure the quantity of debris that had been left out of the NORAD catalogue, they got access to an M.I.T. telescope, at New Mexico's White Sands Missile Range, which could glimpse fragments as small as a centimetre. When a Space Shuttle returned to Earth, the team treated it as a source of evidence. Shuttle windows were often marred by impacts, but typically could not be removed for analysis. During one flight, however, an oncoming object gashed a window so badly that it had to be scrapped. The team, seizing the discarded component, learned that the damage had been caused by a minute speck of paint that had flaked off another orbiting machine.

While Kessler strove to understand the environment, he also took on an activist role to protect it. Many people at NASA remained skeptical of his assignment; some scientists who had mapped debris for the Apollo program were even defensive. "I had the chance to ask them, 'Why didn't you consider this cascading phenomenon?' " Kessler recalled. "Their response was 'We didn't have the computer power.' And I thought, My goodness, they had the computers that were used to go to the moon, and I did my calculations on a programmable calculator. But I didn't try to embarrass them."

Kessler was well suited to the task of convincing his peers; an easygoing Texan, he had a knack for elegant mathematical insights that could be sketched on an envelope, and a quiet flair for showmanship. After examining the damaged segment of Space Shuttle window, he kept it, and sometimes enlivened presentations by dramatically pulling it from his pocket. To address the issue outside the agency, he joined with allies at NASA to push the makers of the Delta rockets for a redesign; later, he helped form the first international organization for space-faring nations, whose work on orbital debris was absorbed into the United Nations.

But space diplomacy wasn't always easy during the Cold War. In 1968, the Soviets had initiated a series of antisatellite, or ASAT, experiments, in which a spacecraft packed with explosives would approach a target satellite, then self-destruct, its own shrapnel serving as a weapon. Kessler spent months tracking a mysterious swarm of tiny, perfectly spherical objects, suspecting that they had come from a Soviet ASAT test intended to prepare for a nuclear war. The source turned out to be stranger: a Soviet naval satellite that had ejected its reactor core before it fell to Earth. The spherical objects were globs of liquid-metal coolant that had been jettisoned at the same time. "When we approached the Soviets, they said, 'Yup, we did that,'" Kessler recalled. "Then they said, 'Nope, nope, we didn't.' Then they said, 'Oh, they're going to *evaporate!*'"

America had its secrets, too. In 1985, Kessler was drawn into Ronald Reagan's Star Wars initiative when the Air Force decided to conduct its own ASAT: shooting down a satellite with a missile fired from an F-15. He begged the military to forgo the test. "We said, 'It's going to cause a lot of debris,'" he recalled. The Defense Department was unmoved. "They told us, 'You don't know what's going to happen. It may just leave a clean hole.'" Making the best of the situation, Kessler flew to Alaska to observe the satellite blowing apart in the darkness of space. He tried watching from a ground telescope, but bad weather blocked his view. A NASA colleague used a high-altitude Air Force plane to observe the event from above the clouds—but, while military radar indicated hundreds of pieces, he could see only two. "Those fragments must be black," he radioed. Kessler's instinct was to disagree—the debris was mostly shiny aluminum—but he eventually concluded that electronics on the exploding spacecraft had been singed, coating the remnants in carbon. Further research indicated that most orbiting fragments were very dark—which meant that the telescope at White Sands had been underreporting the environmental damage. There were more objects in space—larger and more destructive ones—than even Kessler and his team had been able to see.

The more Kessler studied Earth's near-space environment, the more worrying the trend lines looked. By the nineties, he had become convinced that collisions in the most populous orbits were cascading, spraying fragments across hundreds of miles. "These unstable regions will act as an increasing source of small debris in all of low Earth orbit for centuries," he warned. In 1986, a European rocket body had broken apart, most likely because something collided with it; one of its fragments orbited for years before smashing into a stabilizing boom on a French reconnaissance satellite. In 1994, a Defense Department satellite, MSTI-2, went dark shortly after launch; NASA speculated that a shard had collided with a bundle of wires, causing a short. MSTI-2 then became debris itself, nearly colliding with the Space Shuttle Endeavour and then with Mir.

Kessler had retired from government by then, but he continued to work with NASA, first as a Lockheed employee and then, after 2005, as an independent consultant. At the time he left NASA, the number of man-made objects in space was declining. ASAT tests were less frequent, exploding rocket bodies were becoming less of an issue, and the collapse of the Soviet Union had put a temporary halt to Moscow's space program; a surge in solar activity hastened the burn-up of many items in low orbit. But the momentum was difficult to sustain. Moscow's space program eventually ramped up again, and new space-faring nations came to behave as heedlessly as the Cold War superpowers had. In 2007, the Chinese military conducted a surprise ASAT test, firing a missile at a weather satellite, scattering so much shrapnel that the I.S.S. is still maneuvering around the fragments. At the same time, satellites and rocket bodies were beginning to collide, as Kessler had predicted—a trend more worrying than deliberate explosions, because it indicated self-generating hazards.

In February, 2009, four hundred and ninety miles above Siberia's Taymyr

Peninsula, on Russia's Arctic coast, two intact satellites rammed into each other for the first time. One was owned by Iridium, the American communications company, and the other was a derelict Soviet Kosmos satellite. They were travelling at tremendous speeds; upon impact, plumes of shrapnel spread outward like ribbons around the globe. The collision—combined with the debris caused by the Chinese ASAT test—added nearly six thousand objects to the NORAD catalogue.

The Iridium-Kosmos smashup marked a dramatic escalation. "We are entering a new era of debris control," Kessler noted. "An era that will be dominated by a slowly increasing number of random catastrophic collisions." He urged space programs to stop abandoning satellites and rocket bodies in orbit, and suggested that it might even be time to retrieve some derelict objects. "As is true for many environmental problems, the control of the orbital debris environment may initially be expensive, but failure to control leads to disaster in the long-term," he argued. One NASA official went so far as to declare, "The Kessler syndrome is in effect." And yet, space was becoming more crowded: more satellite launches, more debris. As of July, 2018, a NASA report states, more than half the items that the 18th Space Control Squadron tracks are fragments. Collisions are now their dominant source.

"People are not really worrying about this, because it is inconvenient to act responsibly," Darren McKnight, who works as a technical director at the aerospace-services company Centauri, told me. Recently, he and some colleagues studied a debris cluster six hundred miles above sea level; there are now sixty close calls in it every day. A hundred miles beneath that cluster is an even more worrying one, where eighteen of the most massive derelict objects in space pass in close proximity on a daily basis. Last year, two of them—a three-ton Soviet intelligence satellite and an eight-ton Soviet rocket body—missed each other by just ninety-five yards. Had they smashed, the effect would have been disastrous. "It would have doubled the catalogued population," McKnight told me. "Sixty years' worth of space-debris growth would have been matched by that *one event!*"

By his estimate, the collision would also have created two hundred thousand bits of "lethal" shrapnel, too small for the military to track but capable of damaging spacecraft. McKnight, like Kessler and others, has come to believe that clearing away artifacts from low Earth orbit is essential to keeping the environment stable enough to use. There is no pragmatic way to vacuum up swarms of microdebris. But removing the largest items can stop more from forming. In 2006, Kessler's successor at NASA, Nicholas Johnson, and an analyst named J.-C. Liou wrote in *Science* that "only remediation of the near-Earth environment—the removal of existing large objects from orbit—can prevent future problems." Developing Kessler's models, they argued that, by 2020, at least five of those had to be removed every year to prevent the number of runaway collisions from spiking disastrously.

Currently, McKnight is working with researchers around the world on a list of the top fifty derelict objects to target for removal. "People think that Iridium-Kosmos was the worst breakup," he told me. "No, it's not! It was really pretty small. If you think that was bad, wait until you see the real thing."

In April, 2018, a SpaceX Falcon 9 rocket took off from Cape Canaveral, achieved an altitude of about three hundred miles, and then released a large unmanned capsule, called Dragon, which propelled itself to the International Space Station. Dragon was ferrying tons of supplies—everything from an HP inkjet printer to space-walk equipment. The largest item in its hold was a foam box, weighing more than two hundred pounds. Aboard the station, the box was kept in storage for two months. It did not have the normal labelling that NASA requires for I.S.S. cargo. In Magic Marker, someone had written on the foam, "NanoRacks Remove Satt P/N: NR-MS-06." For the astronauts on the I.S.S., the box was a mystery. Ricky Arnold, an American serving there at the time, asked Houston if he could use it as a makeshift worktable. The answer was quick and unambiguous: negative. "It was like the large present under a Christmas tree," Arnold

LIZ
MONTAGUE

"And then the princess gave up her throne, because she didn't believe in social stratification."

told me. "No one knew what it was."

The first week of June, Houston told the I.S.S.'s crew that the box contained an unmanned spacecraft, scheduled to launch from the station later that month; once in orbit, it would test technology to remove debris. Although a number of methods had been proposed for extracting space junk—ranging from sticky foam to blasts of air—no technology had been tested successfully in space.

Drew Feustel, a NASA astronaut who was serving as the I.S.S.'s commander, had seen the hazards firsthand: divots in the station's cupola windows and holes punched through solar panels. Here and there, shards had blasted through exterior handrails—a danger during space walks, because the resulting burrs could tear through spacesuits. As alarming as these were, Feustel knew that the I.S.S.'s low altitude meant that its encounters with flying junk were relatively minor. In 2009, he had been on a Space Shuttle mission to service the Hubble telescope, which orbits about a hundred miles above the I.S.S. As he floated from the shuttle to the telescope, Feustel noticed that Hubble's exterior was so pitted that it resembled a moonscape. "In one instance, we found an impact that entirely penetrated the structure," he told me. "No doubt, any particle that can put a hole in a spacecraft can put a hole in your body." Arnold told me that the most worrying thing about debris was the randomness: a fleck could come from anywhere, at any time.

The foam box on the I.S.S. was stored in the station's largest inhabitable room, the Japanese Experiment Module, a laboratory for tests conducted both inside and outside the space station. Near a cylindrical air lock in the JEM, the two astronauts unpacked the box, following instructions issued by Nanoracks, a kind of FedEx for space, which oversaw the parcel's delivery and deployment. The men secured their feet to the floor to keep from floating away, and wore surgical gloves as they worked. Inside the box, they found a cube-shaped device sheathed in glossy solar panels, with semitranslucent gold-colored tape running along its edges. One side of the cube was open, revealing an interior filled with instrumentation. "It was just this magnificent piece of hardware," Arnold told me.

The two astronauts mounted the satellite on a tray, called a slide table, which rolled on tracks through an air lock to the outside. No satellite so large had ever been deployed from the I.S.S.; this one had to be measured precisely to fit. Feustel initiated the slide table, and the cube entered the air lock. On June 20th, the crew released it into the coldness of space. A sixty-foot robotic arm mounted on the station grabbed it, held it a safe distance away, and then let it go.

Feustel asked Houston, "Are we expecting anything to deploy from the satellite?"

"No," Houston said. "That's all we're expecting. It's going to hang there for a while."

Extremely slowly, the cube drifted from the robotic arm, tracing its own orbit over the Earth—a pearl of crystalline blue and snow white, below. Arnold had rushed to the cupola to shoot video of the machine drifting away; satellites are almost never photographed from space. This one reminded him of boxy spaceships from "Star Trek," used by a collective of cyborgs called the Borg. He hoped to post a video of it on Instagram, with the tagline "Resistance is futile!" Houston told him that he could not. The cube was proprietary.

As the I.S.S. and its payload slowly spread apart above the planet, they passed over the University of Surrey, an hour outside London. On its sprawling campus, a group of engineers had gathered in a two-story brick building named for the science-fiction writer Arthur C. Clarke. The building is home to the Surrey Space Centre, which oversaw the creation of the boxy satellite—a machine called RemoveDebris. They had crowded into a control room with wall-mounted screens, one of which relayed a live feed from a camera on the I.S.S.'s exterior, showing RemoveDebris in orbit. They had spent six difficult years building the machine. Seeing it aloft, they were ecstatic.

When Feustel had asked Houston if anything was going to deploy from RemoveDebris, the engineers at the Surrey Space Centre, listening to the transmission, burst out laughing. The satellite was packed with ballistic instruments designed to shoot from multiple cavities—among them a titanium harpoon, strong enough to pierce a spacecraft wall, and a twenty-five-foot Kevlar net designed to grab an object in space and haul it down toward Earth.

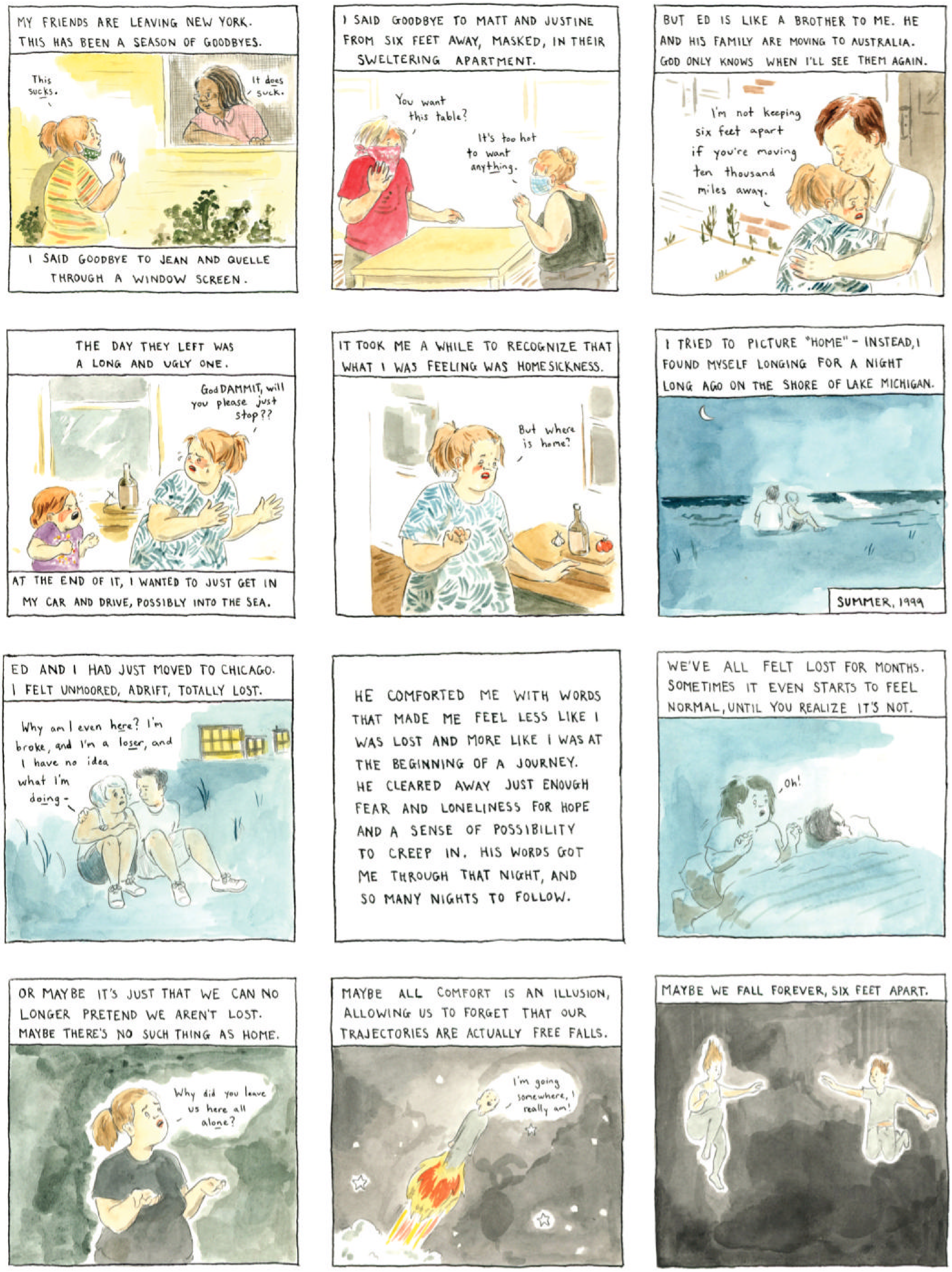
The net was a particular source of anxiety. Officials at NASA were so concerned that it would deploy prematurely, entangling the multibillion-dollar space station, that they insisted RemoveDebris be allowed to drift away from the I.S.S. for a full month before the experiment began. Standing in the Surrey Space Centre's control room earlier this year, Richard Duke, a project engineer on the RemoveDebris team, recalled, "Of course, we didn't want *anything* to deploy." He chuckled. "We were doing this for the first time, and there were so many things that could cause damage." Simon Fellowes, RemoveDebris's program manager, put it differently: "No one is going to forget it if you are the guy who took out the I.S.S. with a net!"

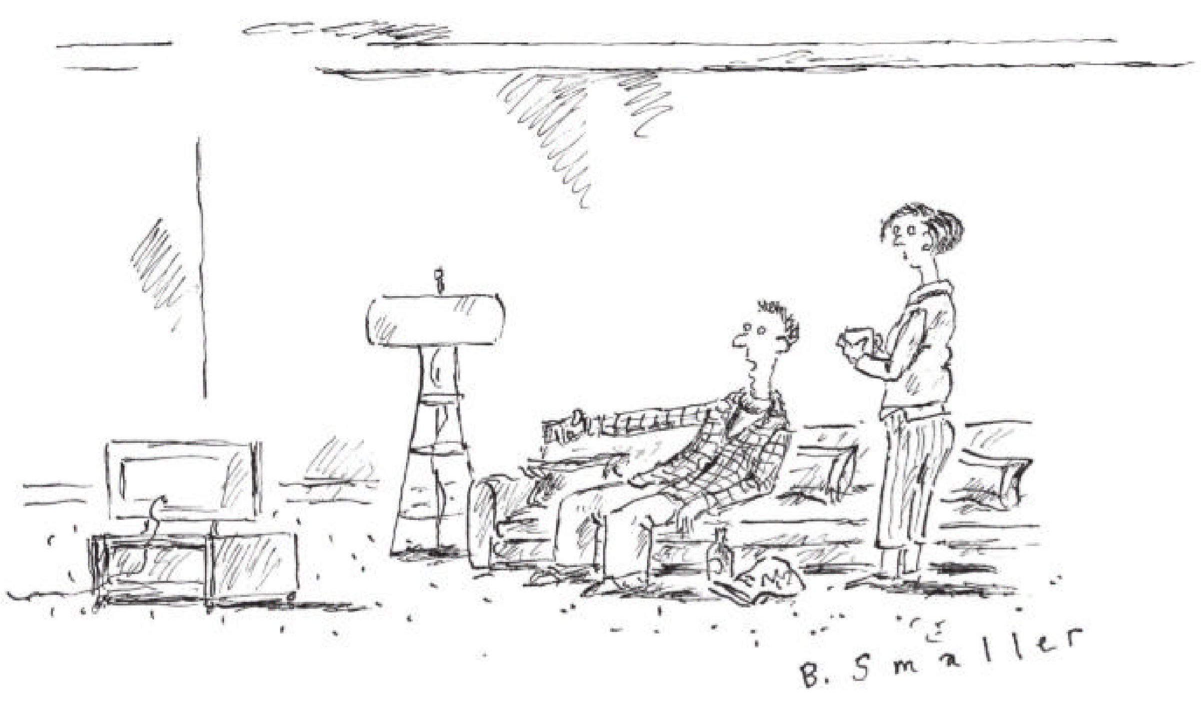
In a field that epitomizes Big Science, the Surrey Space Centre is an unusual player: a tiny, low-budget, academic-minded operation that has pioneered the development of tiny, low-budget satellites, called CubeSats, some of which are no bigger than shoeboxes. "We demonstrate new technologies cheaply," Duke told me. "Nobody ever wants to fly anything new on the big spacecraft, because you don't want to risk it. But if you can't fly it, then how do you get experience?"

In the eighties, the university spun off a private company, Surrey Satellite Technology, which manufactures medium-sized spacecraft; that company was later acquired by Airbus. RemoveDebris emerged from a brainstorming session among all three parties, in 2013. By then, it was possible to imagine a market for technology that regained control of derelict objects in space. The United Nations had issued a guideline that satellite operators must remove their spacecraft from orbit after twenty-five years. There was also a suggestive test case: in 2012, the European Space Agency lost control of a satellite called Envisat in the most crowded region of space, and began to express an interest in funding the development of debris-removal technology. Envisat was an eight-ton machine, the size of a school bus, spinning uncontrollably—as a former ESA official said, "Quite a huge beast."

Within Airbus, groups of engineers

FREE FALL: COMIC STRIP BY EMILY FLAKE


MY FRIENDS ARE LEAVING NEW YORK. THIS HAS BEEN A SEASON OF GOODBYES.
This sucks.
It does suck.
I SAID GOODBYE TO JEAN AND QUELLE THROUGH A WINDOW SCREEN.
I SAID GOODBYE TO MATT AND JUSTINE FROM SIX FEET AWAY, MASKED, IN THEIR SWELTERING APARTMENT.
You want this table?
It's too hot to want anything.
BUT ED IS LIKE A BROTHER TO ME. HE AND HIS FAMILY ARE MOVING TO AUSTRALIA. GOD ONLY KNOWS WHEN I'LL SEE THEM AGAIN.
I'm not keeping six feet apart if you're moving ten thousand miles away.
THE DAY THEY LEFT WAS A LONG AND UGLY ONE.
GodDAMMIT, will you please just stop??
AT THE END OF IT, I WANTED TO JUST GET IN MY CAR AND DRIVE, POSSIBLY INTO THE SEA.
IT TOOK ME A WHILE TO RECOGNIZE THAT WHAT I WAS FEELING WAS HOMESICKNESS.
But where is home?
I TRIED TO PICTURE "HOME" - INSTEAD, I FOUND MYSELF LONGING FOR A NIGHT LONG AGO ON THE SHORE OF LAKE MICHIGAN.
SUMMER, 1999
ED AND I HAD JUST MOVED TO CHICAGO. I FELT UNMOORED, ADRIFT, TOTALLY LOST.
Why am I even here? I'm broke, and I'm a loser, and I have no idea what I'm doing -
HE COMFORTED ME WITH WORDS THAT MADE ME FEEL LESS LIKE I WAS LOST AND MORE LIKE I WAS AT THE BEGINNING OF A JOURNEY. HE CLEARED AWAY JUST ENOUGH FEAR AND LONELINESS FOR HOPE AND A SENSE OF POSSIBILITY TO CREEP IN. HIS WORDS GOT ME THROUGH THAT NIGHT, AND SO MANY NIGHTS TO FOLLOW.
WE'VE ALL FELT LOST FOR MONTHS. SOMETIMES IT EVEN STARTS TO FEEL NORMAL, UNTIL YOU REALIZE IT'S NOT.
Oh!
OR MAYBE IT'S JUST THAT WE CAN NO LONGER PRETEND WE AREN'T LOST. MAYBE THERE'S NO SUCH THING AS HOME.
Why did you leave us here all alone?
MAYBE ALL COMFORT IS AN ILLUSION, ALLOWING US TO FORGET THAT OUR TRAJECTORIES ARE ACTUALLY FREE FALLS.
I'm going somewhere, I really am!
MAYBE WE FALL FOREVER, SIX FEET APART.



"Now that I can watch whatever I want, whenever I want, my life has no structure."

• •

across Europe were already experimenting with tools that could bring down such a thing. A team in France was working on a laser-based imaging system, called LIDAR, that could allow a junk-collecting satellite to navigate around an abandoned object. A team in the United Kingdom was working on a harpoon gun, inspired in part by nineteenth-century whaling technology. A team in Germany was developing a net. In zero gravity, the net would have to open with perfect symmetry, then collapse around an object without pushing it away. Airbus had tested it in a vacuum, and in the "vomit comet"—an airplane that took a steep dive to simulate a gravity-free environment.

On Earth there is no way to test such a device both weightlessly and in a vacuum. But the Surrey Space Centre had experience designing low-cost orbital experiments; after the meeting, it applied for a fourteen-million-euro grant from the European Union to oversee a consortium that would test the Airbus technologies in space. Fellowes was brought in to lead it in 2015. "A harpoon and a net," he told me. "Other than a stone, how much more basic can you get?" And yet nothing about the work was simple. Several years earlier, NASA's J.-C. Liou had warned that, though debris removal was urgently needed, attempting it would involve "tremendous technical challenges and costs." The Surrey Space Centre was effectively seeking to prove this assessment wrong. As Fellowes told me, "To be completely honest, it looked like an impossible project."

The problems weren't confined to the engineering. Legal complications prevented Fellowes's team from grabbing actual debris during a test: even after a spacecraft is blasted to pieces, those pieces remain sovereign property. The experiment would have to deploy its own targets. Over time, the design began to resemble a Russian matryoshka doll: nested inside the satellite ferrying the Airbus technology were several smaller CubeSats that would fire out of it. In order for the spacecraft to relay data to one another, radio frequencies had to be secured around the world. "Not easy!" Duke said. "We were having to talk to Japan, saying, 'Well, we know we are on the same frequency as your TV!'"

Even getting RemoveDebris onto the International Space Station posed complications. "We were in a safety briefing with NASA," Duke recalled. "We were talking about this thing called the H.T.A., and eventually they ask, 'Well, what's the H.T.A.?' We go, 'The harpoon target assembly,' and, instantly, they go, 'Uh, what did you say?'" The Surrey team screened an animated film to demonstrate the device, but it only elevated the NASA officials' concern. Fellowes told me, "They were stunned—just silence—until they were, like, 'Let's watch that again.' Then it was, 'You guys must be crazy!' If you think about it, everything onboard RemoveDebris is specifically designed to bring a spacecraft down! The LIDAR—one guy at NASA was, like, 'Let me get this right. You've got a laser, and, if you turn it on, it will blind you, but it is not visible to the human eye?' We were, like, When you put it like that, it sounds *really* bad!"

Fellowes's team worked for months to meet NASA's safety requirements—going so far as to blow up batteries in a parking lot. When NASA was finally satisfied, in 2017, the team installed a metallic port on RemoveDebris, for the I.S.S.'s robotic arm to grab onto once it left the air lock.

Shortly after the engineering was finished, the team received disconcerting news: the Japanese Aerospace Exploration Agency had launched a similar device, a half-mile "electrodynamic tether" designed to grab junk in space. (The tether was made with the help of a Japanese company that has been weaving fishing nets for more than a century.) It had just failed—even though the project had the support of a national space agency. "It was upsetting and worrying," Fellowes told me. "You think, Those guys know what they are doing as much as anyone. What did they miss?" By then, there was little that his team could do. RemoveDebris was packed in foam and delivered to Cape Canaveral, to wait for its own try in space.

Throughout the summer of 2018, RemoveDebris inertly orbited the planet, while the team in Surrey worked to insure that all systems were functional. Then, that September, the engineers instructed the satellite to launch the CubeSat and fire the net at it. The commands had to be given when the satellite was over England, but the experiment was scheduled to happen over Asia, where lighting would be good. Fellowes spent a restless night checking his phone. The 18th Space Control Squadron was keeping a close watch. At 2 A.M., it sent a note: something had accelerated from the satellite. Duke recalled, "They say, 'We've got two objects.' It could have been that the CubeSat came out, but the net hasn't. It could have been that the net worked, but the CubeSat didn't."

At 6:30 A.M., Duke rushed to the

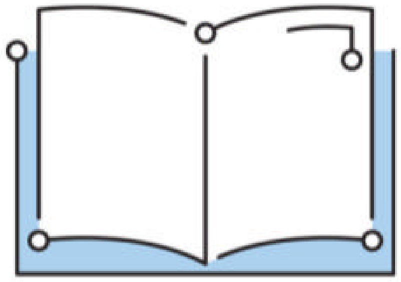
office, where he found Fellowes going through data that the satellite had transmitted. RemoveDebris had recorded about a minute of video, but it was possible to download only a few frames each time the satellite passed overhead. In ghostly black-and-white, the footage depicted a silent, zero-gravity technological ballet. The target CubeSat shot itself out of RemoveDebris into the darkness of space. Its reflective exterior looked like a gleaming brick, until pressurized gas forced aluminum tubes to burst outward from each side, transforming the satellite into something resembling a jack, with sails between its spokes—a target with greater volume. But, because of a leak in one of the tubes, they had unfolded asymmetrically, causing the target to start spinning wildly. Duke and the others watched the footage, rapt. "As engineers, we had visualized this as charts, as graphs, as timetables," he said. "I don't think we thought about what it would *look* like."

Moments later, the net deployed. Along its perimeter, Airbus had fixed a series of small motors, which acted as weights. They surged out in a starburst pattern, causing the net to resemble a silvery undersea creature preparing to consume its prey. To keep the experiment simple, the net was not tethered to the RemoveDebris satellite; it traversed space on its own. As it hit the target, the motors on the webbing activated, drawing in the strands around the CubeSat, the two entangling into a single spinning mass. The imagery was part technical study, part Man Ray. "I was in shock," Fellowes told me. "I went for a walk and got a coffee, and then all I did for the next hour was watch it repeatedly." The experiment was conducted at a very low altitude, to insure that the tangled net and CubeSat—Object No. 43621—would not remain in orbit. Within months, they plummeted, the years of research reduced to ash.

Last year, the team instructed RemoveDebris to fire its harpoon at a panel mounted on an extendable boom. The force was so great that the panel snapped off. But the puncture was dead on, and the harpoon locked itself in, without throwing out shards that would become more space junk. Duke told me that the team originally thought the harpoon was better suited than the net to capturing large payloads like Envisat; it might risk destroying the target, but it was simpler. (At an Airbus facility, I saw a huge next-generation harpoon gun that looked as if it could take out a whale.) The net system was far more difficult to operate—but, in his view, the success of the experiment made it seem like the more appealing option. "That's what this was about," he told me. It was still far from clear that either tool could be deployed on a real mission, but that was for future trials to study, he said: "We wanted to demonstrate the technology, prove it fundamentally could work."

In 1979, Arthur C. Clarke imagined a future in which giant lasers kept space clear of debris—an idea that NASA has considered but not pursued. There is no shortage of alternatives. Companies are competing to develop technology that can either dispose of derelict machines or repurpose or service them. Nanoracks is hoping to convert orbiting rocket bodies into habitable space stations, and is even preparing a space-based test of a tool that can slice metal without shedding debris. A Tokyo-based company, Astroscale, has raised a hundred and forty million dollars in venture capital, and this year plans to launch an experiment to grab and control an orbiting artifact; members of the RemoveDebris project are building it a test target.

Kessler, who is now eighty, told me that he sees no obvious technical solution. "It's a very difficult problem," he said. "I'm glad I don't have to work on it. You have to start small."



A few years ago, the European Space Agency decided that Envisat might be too challenging as a first goal, and so it drew up a list of other derelict objects and issued a tender to bring one down. Thirteen consortia applied, including groups led by Airbus and Astroscale. In December, 2019, ESA announced a surprise winner: a group led by a tiny Swiss startup, ClearSpace, which committed to retrieving a rocket body for more than a hundred million euros. It plans to use untested technology—robotic pincers—that theoretically could be reused. "Imagine how dangerous sailing the high seas would be if all the ships ever lost in history were still drifting on top of the water," ESA's director general said at the time. "That is the current situation in orbit, and it cannot be allowed to continue."

Europe has become a leader in the effort to clean up space, while the program that Kessler created within NASA has come to look increasingly anemic. In 2018, just after RemoveDebris's net experiment, I spoke with J.-C. Liou, who now runs the program. The Trump White House had recently issued NASA a new goal, to return people to the moon—a budget-dominating mission. Despite Liou's earlier work illustrating the need for debris removal, he described it to me as an unrealistic priority, and instead emphasized prevention—better compliance with existing rules—and the importance of further study. He had been cleared to use a satellite to measure millimetre-size objects. This year, when I checked in on the project, I learned that it had been killed. NASA barred me from calling Liou again.

And yet, as Liou's own models show, a new orbital catastrophe is only growing more probable. Mega-constellations of satellites, such as Elon Musk's Starlink, are being put into orbit; by one estimate, at the current rate, there will be fifty thousand new satellites serving the Internet in ten years. Meanwhile, in the low exosphere, the environment continues to degrade. This January, many miles above Pittsburgh, a decommissioned telescope and a defunct military satellite missed each other by roughly fifty feet. In May, a twenty-ton Chinese rocket nearly fell into Central Park, instead smashing into the Atlantic off West Africa—a reminder that there are huge masses moving at immense speeds not so far above the surface of the Earth. Almost simultaneously, a Russian Fregat rocket blew up hundreds of miles above the Indian Ocean. As best as could be discerned, it fragmented into sixty-five more pieces. The NORAD catalogue had to be updated. ♦

Face Time

...

Lorrie Moore

ILLUSTRATION BY ARD SU

I asked my father if he knew where he was and he said, "Kind of."

"You are in the hospital. Your hip surgery went well. But there is a virus and you have been found to have it. You are contagious. No one can get near. It's happening all over the world. You caught it in your assisted-living facility. The chef had it."

His blue eyes had a light that appeared to race from the back of his brain to the front. The brightness of them seemed to direct itself, with sudden power, into the screen, then straight through and past me. "The Berrywood chef?"

"Yes."

Now his eyes dulled again. "The food was not that good. I did have a glass of lemonade once that was delicious. Like in the war. Cold lemonade in a jam jar." He licked his lips. There was crust in the corner of his mouth, and he picked at it with one of his long, now thin pianist's fingers. The oxygen tubing dangled on his chest.

"Is there something you need now? After we finish FaceTiming, I can phone the nurses' desk."

"I'd like some of that lemonade."

"I'll ask them about that." Why should this patient be so thirsty? Give him a lemonade, for Christ's sake. Give him the lemonade of his memory and his dreams. "We are drying the lungs," a doctor had said last week. "We don't want him to aspirate."

"Isn't this a quality-of-life issue?" I did not say. Doctors all around the country seemed confused about whether hydration or dehydration was better. I feared that dehydration meant they were sending him off the exit ramp. A dry death. A dry death is better, someone had once told me.

"But how does anyone know?" I had protested.

"There is no death rattle. You don't hear the death rattle."

"So you mean it's better for us," I said. "The living."

Who knew what the dying felt at the end? They didn't return calls.

"That would be very kind of you to ask," my father said, delicately trying to moisten his lips with his gray tongue.

He attempted to smile but his whole dry mouth seemed unsplittable and in need of sponging.

His bottom teeth were as dark as teak and twisted in his mouth.

"When the nurse comes back in, I'll tell her."

"Did I do something wrong?" he asked. "I feel like I did something wrong."

"No. Not a thing. The nurse set up the iPad for you but then had to leave. She'll be back later."

Three times daily, visored, hazmatted nurses dressed like beekeepers popped in and out of the room, their faces indiscernible, their voices the high, chipper kind that children and the elderly are supposed to prefer. Birdlike, perhaps. Good to have the song of a bird. Even if they were frightened birds, in a rush to get out of there. Even if they were terrified of their tasks.

"Are you in any pain?" I asked.

"Oh, not really," he said defeatedly.

An exhilarating exchange of ideas was not possible on screens or in this weird dystopia. Still, I decided to make the situation as interesting as possible. "The British Prime Minister has this virus," I said. "So does Prince Charles. Also Tom Hanks."

His face perked up as he searched for a reply. "So I'm in good company."

"Yes, you are. And the poor are getting the virus, too, of course."

"I'm the poor!" he said. "Especially after next month's Berrywood bill."

Later, I would accuse my quite comfortable friends of appropriating the illness from the disadvantaged, of co-opting a fear of the illness that targeted prisoners, front-line workers, meatpackers, and, of course, the elderly. "It's all unfair."

My father's sight came rushing into his eyes again and brightened up the screen. "I just hope I don't have to arm wrestle the meek and the peacemakers for a seat in Heaven. That would be awkward."

I gave him a smile, as if everything were all good, then started in with some more about the virus. I would try to make a bad situation diverting. He would be interested. "It is all over the globe," I told him. "No country was really prepared, except perhaps Finland. The Finns are a nation of doomsday preppers, so they were completely ready. They've been stockpiling for years, out of fear of Russia, so they're in pretty good shape. Also, South Korea did well. They are wary of North Korea, so are somewhat disaster-ready. Same as Taiwan, which fears the mainland."

I could see him considering this. "I guess we just weren't that afraid of Canada," he said, his eyes giving a wobbly little jump. Jokes! The very wattage of life. Performance had always been how he conversed, summoning it up from the depths. Rehearsing the recitation. Looking for the opening. There it still was, beneath the bullshit malaria drugs.

"I guess we weren't! Even though Trudeau's wife came down with this."

"Is that so? Pierre Trudeau's wife?"

"Justin Trudeau. Yup." I could see his focus change and his chest rise with sad and effortful breathing.

"I am supposed to go to the shoe store, but if I get there before the pastor I won't have the key."

I knew the hydroxychloroquine gave people hallucinations. Still, all the doctors seemed to be using it. It had the endorsement of Washington, which had invented the undrained drained swamp, and of France, which had invented pasteurization and had been dining out on that ever since, while still serving small, moldy raw-milk cheeses. "It will be O.K. They are giving you medicine." The last time he'd been on it was in 1945, during the war, when he actually had malaria.

"My mother had the Spanish flu."

"Yes, I know."

"She was pregnant with my older brother and they told her to lie there and not to cough or her lungs would burst."

I wondered if lungs could really burst. I had heard this story from my dad on several occasions in my childhood and wondered about its veracity every time, though never out loud. Now to watch him sending these utterances into the light of the screen was like seeing an old man burn all his poetry in a fire.

"They were all interesting people, my family, my sister and brother and parents," he said, seemingly forgetting about his own three children: Livvy, the eldest, me, in the middle, and Delia, the baby, who had opted out of these scheduled conversations. "No-necrophilia Delia," she'd called herself. She adored our father but could not participate.

Oddly, it seemed that his daughters,

at present, were not as interesting as his childhood family. Or perhaps that had always been true. His mind seemed a little rinsed of all of us, even of our mother, who had died eighteen months before, so abruptly that her vividness for me had not been interrupted. There were still things I made mental notes to tell her. She would want to know how Dad was doing.

"Now, you were born on Staten Island, isn't that right?" my father said.

I was slightly startled. "No, that was Mom." I knew I sometimes looked like her.

His head leaned back against the pillow, and then he pulled it up to look again into the iPad that the nurse had set there on a kind of tray. He had grown thinner, and silvery stubble covered his chin. He was trying to be courteous. He did not ask after me, for which I was grateful. Who wanted to share the banalities of this life right now: the low buzz of dread in the head like a broken wire; the endless YouTube links; everyone frantically not socializing; the recently furloughed male friends doing their insane air-guitar concerts on Zoom; the hours of television news interspersed with highly theatrical, mind-boggling insurance ads; the early-morning senior mixer at the supermarket; the neighborhood walks with face masks hanging from one ear like dream catchers. Women created e-mail threads of their readings of the Bible. It was all ghastly, especially the singing "Happy Birthday" twice as you washed your hands, because it might never actually be your birthday again so have at it. Well-to-do white families in large suburban homes tended to their bubbles—bubbles that intersected other bubbles so were not bubbles at all—disinfecting grocery bags and ordering from Amazon and Grubhub, and in general claiming the pandemic for themselves. The shuttered theatres and museums made the gloom of cities everywhere a harrowing one. Photos of empty boulevards and squares flooded the Internet. Pierced ears filled back in, because who wore earrings anymore? Your badly painted toenails you could say were done by a neighbor girl, home from school, on her deck—a neighbor girl who was actually you. French wine had been turned into hand sanitizer. Wisconsin milk had been turned into soap.

But some things had stayed the same, like the arrival of spring and the pastel monotony of the flowering shrubs. Who could feel how large a transformation was really occurring when the earth seemed to be enjoying itself more than ever, and who could speak of such things to a man who was clutching his plastic necklace of oxygen?

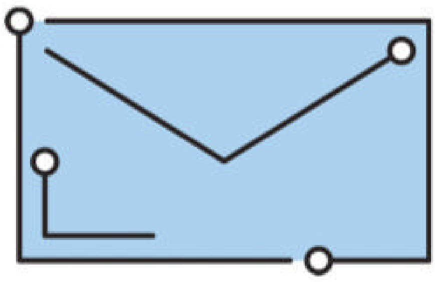
"Are you comfortable, Dad? Just lie back away from the iPad if you want. Don't make yourself uncomfortable. We can still talk." The headboard behind him was white pleather and attached to the wall. He had a bedsore and a catheter for a prolapsed bladder. I knew that. His unrehabilitated hip would never be right now, though the surgery, we'd been told, had been a great success.

His gown was slightly open in front, revealing his pink and sunken chest. He threw his head back against the pillow again, then tipped it forward. "I have to go downstairs and get the mail." And then, for a moment, he seemed to know where he was. "Am I going back to my apartment?"

The Berrywood facility would not readmit him until he had tested negative. So far, four positives.

"Not yet. You have to test negative before they can let you go."

"I don't think I got the mail today. I need to get the mail. I have to do that before I meet the pastor."



There were a lot of things he needed to do and places he needed to be. He was always announcing this. He was supposed to meet trains and people and small groups holding meetings. Perhaps, even in normal life, every place a person believed they needed to be was a kind of hallucination, and that was its power. Berrywood had, some years ago, constructed a fake bus stop for escapees. It was a way of catching a runaway pet with the lure of food. The staff would find residents sitting there, waiting, no bus ever stopping, and talk to them sympathetically, until their plans evaporated into the mist, as so many plans did, even in good times. My father had never got that bad. Before all this, he had seemed fairly with it.

"Is that music playing?" I asked. My laptop had good speakers. It sounded like massage music, a calming electronic flute, the kind of music that played on what one of the nurses called "the classical station." They had two hours' worth of music on each station, she said.

"I was hoping for Brahms," he said.

"We'll see if we can get some Brahms."

"You know, Beethoven had one great symphony, the 'Eroica.' And then there's Mozart's C-Minor. But then Brahms comes in third—he had four symphonies of equal quality."

"That's so interesting," I said. Whenever we spoke of music, he ignored my preference for Tchaikovsky or Duke Ellington. He would sometimes allow for Harold Arlen.

"Only four symphonies, but they were all topnotch."

I didn't always know what to say. "Well, I'm going to call the nurses' station and see if we can get some Brahms for you."

"Any of the symphonies," he added.

An aide suddenly appeared on the screen in her beekeeper's garb. "We are here for his oxygen levels and to change his dressings," she said.

"O.K. Well, Dad? I'll leave you to these proceedings. But I'll hope to reach you later tonight. Livvy's going to call at some point today. Love you."

"O.K., honey, good to talk to you," he said, sounding suddenly as he always had. He would never have said "Love you" back. He had fought in the Philippines. The greatest generation did not do the fey, fake "Love you, too." The greatest generation did not wear lip balm brought by the aide or don compression stockings—too feminine—and hearing aids were a lot like jewelry, and thus a problem, and were sometimes found lost amid the tangled sheets. The greatest generation had taken a lot of orders early in life and did not want to take any more.

The aide peeked into the screen and waved with her gloved hand. "Bye-bye," she said.

"Thank you. Is it possible to play some Brahms?" I asked her quickly.

"This isn't Brahms?"

"No."

"Brahms? How do you spell it?" She seemed to be typing it into the iPad.

I told her, hoping I'd put the "h" in the right spot.

"I'll see what I can do."

"Also, do you have lemonade?" I asked.

"Here's this," she said, bringing a plastic cup to my father's lips. He sipped, then grimaced and waved it away. It looked to be a chartreuse-colored, watery drink made from powder.

"Bye-bye," the beekeeper said again, as she grew larger in the screen, and then turned the iPad off entirely, so that on my laptop my connection became just a lit square with my own face in it.

"So what makes you uniquely qualified to take everyone's job?"

• •

My father was too old to grasp technology, so the nurses were the ones to place his FaceTime calls, according to a schedule that Livvy had given them. But the nurses were frazzled and Livvy could be a pain in the neck, though she didn't know it. Her husband always called her an angel, massaging her shoulders, hoping to get laid. And Delia, of course, had refused to be a part of it. "I can't watch Dad like this," she'd said again that day.

The following afternoon, a FaceTime call came in from Livvy. "I thought I'd patch you in and share my time with you," she said.

"What do you mean? I'm scheduled for a different time." But Livvy was both bossy and retired, a bad combo. She'd retired too young.

"Watch this," she said and spun her phone so that through my screen I saw her screen and in her screen I saw my father.

"Hi, Dad," I said.

"Hey, hi!" my dad croaked uncertainly. Then the screen switched so that I was looking into the black of Livvy's fireplace.

"Why am I looking into your fireplace?" I asked.

"It's so he can see you. The way it's patched in you can't both see each other at the same time. When he sees you, you don't see him—"

"I see the fireplace? This is too strange."

She toggled back and forth between the black hearth and my bewildered father. I didn't want to be patched in in this manner.

"Well, I thought we could sing to him," she said. I knew that one afternoon she had used the iPad as a nanny cam, watching him while she folded her laundry. She had Ferberized her children—a method that was also known as "graduated extinction"—letting them wail themselves to sleep as she watched, and I wondered if there wasn't something similar in what she was doing now.

"I suppose we could sing 'Danny Boy,'" I suggested. "It's a beautiful song and it matches his name."

"Oh, I don't think Dad likes that song. He says they're not the original words."

"What do you mean? It's a beautiful song."

"Yes, but he objects to it somehow. He says the Irish took it from the English."

"The Irish stole 'Danny Boy'? That's the most ridiculous thing I've ever heard." Now I had questioned her authority. There was always a crisis of expertise with Livvy.

"How about this?" Livvy said. She sang into the phone, "If you'll be M-I-N-E mine, I'll be T-H-I-N-E thine, and I'll L-O-V-E love you all the T-I-M-E time. You are the B-E-S-T best of all the R-E-S-T rest—"

"What the heck are you singing?"

"Dad used to sing me all his old Army songs." She laughed.

"That's an Army song? And we still won the war? I think I'm going to go and just wait for my own call with him."

Now my father, on the screen, let out a howl of anguish and I could see him grimace with agony and sorrow. He tore at his cannula and his gown.

"Whoa," Livvy said. "What's going on

TEX HAD A FEELING SOMETHING WASN'T QUITE RIGHT

Glen Baxter

here? I think he doesn't want you to go."

"That's not it. He hardly knows I'm here."

My father's face became a gash of pain. "*Bitte, bitte*," he cried hoarsely. With one hand, he fiercely sliced the signal for "cut" at his throat.

"Speaking German. Still sharp," Livvy said.

"I don't think speaking one's college German right now is a sign of being sharp."

He was clearly hallucinating, agitated, imagining he was a prisoner of war; that was what it must have felt like to him—the cruel isolation, the medicine, the lights, the strange machines all around. Of course, during the war he had been in the Pacific theatre. But hallucinations were not fussy about details like that.

He tugged at the tubes in his arms.

Terror flew from him in a kind of guttural howl like a whale song. "*Nein, nein, nein. Bitte. Nein.*" He thrashed around in the bed.

I texted Livvy: *I can't watch this. It's unbearable.* Did she no longer know what was bearable and what was unbearable? Well, no one knew anymore.

I will speak to him tomorrow. I'm going to give him his privacy.

I got into bed. I turned off the phone ringer and just watched television. Every now and then, the numbers of telemarketers and scammers appeared in white on the screen. At night, my dreams often featured such alerts, scrolling like ticker tape across them, and I would spend much of the dream trying to figure out whose numbers they were.

The next evening—evening was better, Livvy said—I waited hours for the call from the hospital to come. I sat before my computer, waiting for the FaceTime icon to enliven itself. Livvy sent e-mails and texts: *Tell them to turn the lights down. They are too bright. I keep telling them to turn them down but they don't. Ask for Eileen or Carmen. One of them is usually on duty. Ask them if they got the pizza we ordered for them.* Livvy's patient advocacy, I feared, would get him killed. The overrun hospital would triage him, and the hospice staff would move in and put him down like a dog, thanks to his annoying daughters.

The call came in late. The face that filled the screen was a beekeeper's. Was it Eileen? Was it Carmen? I did not know. She seemed new. "Your very nice father is here, but he is asleep." She stepped away from the screen, and I saw him with his eyes closed, his head hanging off his neck in a tilted fashion, the oxygen cannula taped in place, his mouth a dark crescent. They had shaved him, so his face was now cleared of the patches of miniature birch forest that had sprung up there. His skin had a butterscotch tinge, and his neck was ropy against the blue cotton of his gown. The nurse stroked his forehead with a latex-covered finger. Gingerly, but several times. "He's asleep but he's hanging in there. He's a sweet man."

"Thank you for calling me. I'll try to connect with him tomorrow."

"Yes," she said. "I'll send you some pictures of him sleeping," she added, and began tapping the iPad. Then she looked up. "Good night!" she said brightly, performing the role of saintly nurse, her head filling the screen as she moved in to shut it off. Surely her loving-kindness would vanish as soon as the iPad went dark, and her demeanor would reveal an eagerness to be rid of this COVID-ic old guy with his bedsore and immobile hip, his catheter and oxygen tubing.

I called Delia of the camellias, lying on her chaise longue. "He's stranded there, like someone fallen on a battlefield," I said. "Everyone is just stepping around him. He's in the way." How could I speak the lonely, frantic improvisation of my inadequate self-reliance? She was well versed in her own.

"I told you. I did my crying last week. We had a good long talk just before his surgery. It contained dignity and charity for all. You'll have to call me when it's over." Her voice broke a little.

"Maybe he'll get out. Maybe he'll finally test negative and be released to rehab to get his hip working again." I could not imagine it. Not really. Even that would be hellish. Then I added, sounding still more insane, "Falconers return their old birds to the wild."

"That would be interesting, if Dad could test negative two times in a row," she said. "Perhaps he will take a long time to die, like a courteous Rasputin. That would be Dad's way. Don't get me wrong. Dad's a nice person. Just maybe a little on the spectrum."

"Not the Rasputin spectrum."

"Is that a spectrum?"

"I'm sure the hospital's hospice nurses think so."

"Is that who's tending to him now?"

"I suspect so. I'm not really sure."

"Well, you and I are a thousand miles away. All this is up to Livvy. She's always the boss, anyway."

"She doesn't complain."

"No, she instructs. Which creates rage."

"She's already antagonizing the nurses. I fear she's going to get him killed."

Delia, the baby, was beloved. Much more than Livvy or me. I was probably too mysterious to my father—no husband! no child!—for him to love me in more than an average way: a feeling he had in common with all the men I'd ever known. Still, like them, he seemed to enjoy talking to me. "What do you think of Biden?" he often asked. He was hoping to live until November, to cast his vote for the Democrats, and this was what he enjoyed talking about the most. As well as Brahms.

"Dad arranged to donate his body to the medical school," I said now, changing the subject only slightly, "but they can't possibly take it at this point. He would be like Typhoid Murray."

"Now you have made me laugh," Delia said, not laughing.

The next day, at Livvy's instructions, I waited the entire afternoon. When not watching for the FaceTime icon to jump up off the dashboard of my computer screen, I stared out the window at the haphazard latticework of trees against the sky, intersected with transformers and wires that had squirrels running along them like cursors. A satiny blue-black cowbird sat atop a phone pole, a cut-rate omen. The call was supposed to come in at three in the afternoon, but by 9 P.M. nothing had come through except Livvy's texts: *Don't forget about the lights! Please ask about the music again! They keep playing that Sounds of the Seasons loop. Remind them that that pizza came from us!*

I called the nurses' station. "This is Dan Fordham's daughter—he's a patient on your wing? And I was supposed to get a call this afternoon but I've been waiting for hours and nothing has come through. I just want to make sure you have the right number?"

"Dan Fordham. Yes. Let me get back to you," the nurse said.

"I hope you got our pizza," I mumbled pathetically; she had already put me on hold.

And then we were disconnected and a dial tone buzzed in my ear, like a message from the universe. I called back and got the voice mail and so left my number and my e-mail. I waited several more hours. Even Livvy and her husband went to bed—*We're going to bed*—without waiting any longer for a report from me. And then it was midnight, and shortly thereafter the phone rang and I knew the message it contained. *The pipes, the pipes. . . . From glen to glen.* I could not touch the phone. I would let the voice mail pick it up. My actual ear had not been readied. But then I grabbed the phone and said hello and received the news. I thanked the nurse. I added, "He wanted to make it until November so he could vote. Perhaps that was too much to hope for."

"I am very sorry," came the voice.

I went to bed. I wondered whether in the final moments a dying person said, "So this is death," or did they say, "So that was life"? Or did a nice man who had not planned to die so alone and isolated but in his own bed with family gathered around think anything at all? Perhaps at the end he was simply tired, in a condition of holy yet unenlightened bewilderment, all consciousness as fake as a skit. I missed him already and without comprehension.

I spent the next morning sending e-mails to those who needed them. By the afternoon, the sky had the slurry look it could have before a storm. Outside, things were starting to move and fly, with a heavy hand, a flat foot, and a hard rain: a derecho, four minutes of straight winds at hurricane strength. It tore up jungle gyms, knocked down power lines, uprooted trees.

Even this set was being struck. A transformer blew in the alley, and I cried out in fright.

The ensuing power outage darkened and enfeebled the town for almost a week. Traffic lights went dead in their various eyes. Neighbors in masks and nitrile gloves hauled thawed frozen food to the curb in black trash bags. Every evening, no phone or Wi-Fi, no communication of any sort, my cell uncharged, I ate a few apples with some peanut butter and went to bed at seven, when the sky lost all sun. With a flashlight, I read essays of zigzaggy piety and po-mo chic until I fell asleep. Could a thought become an idea without instruction? Could an emptiness of thought eradicate ideas? With my father gone, his body chilling in a Thermo King truck far away—did the workers, stacking him up in plastic wrap, talk to him, saying, "There you go, sir, there is nothing to worry about now. You are on your way, my man"?—I had lost all interest in myself and all conviction or belief in forms generally.

In the mornings, outside, chainsaws dissected old red oaks, freeing them from tangled wire. After six days, unannounced, the lights came slyly, silently back on, as if a large cloud had discreetly shifted. Motors kicked in. Clocks flashed their incorrect times. All the little mice of my mind returned, found their corners, and began to set up shop. ♦

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The author on bearing witness to suffering.

THE CRITICS

BOOKS

BETTER ANGEL

An Abraham Lincoln of his time, and ours.

BY ADAM GOPNIK

Lincoln revisionism is not new. In the nineteen-fifties, Edmund Wilson, in these pages, shook off the crooning hagiography of Carl Sandburg's multivolume biography and replaced it with a vision of Lincoln as a calculating, aggressive nationalist—an American Bismarck, though one in possession of a sternly arresting prose style. The Civil War, in Wilson's account, was fought for no higher cause than that which makes sea slugs attack other sea slugs: because it is in the nature of beasts to make war. In place of smiling Honest Abe we got lynx-eyed Killer Lincoln.

This view was taken up, with a few complimentary curlicues, in Gore Vidal's best-selling 1984 novel, "Lincoln." Wilson and Vidal, channelling the ghost of Henry Adams, and seeing themselves as the last redoubts of patrician hauteur, painted their Lincoln against the background of the Cold War. Lincoln's militarization of the Republic, his invention of an armed national-security state, was taken to be a kind of original sin that would lead to the Pentagon and Vietnam. The lovable Lincoln persisted through this period, but Lincoln was interrogated as much as admired. (And this was merely the revisionism from the left; some Southern conservative intellectuals were still muttering "*Sic semper tyrannis.*")

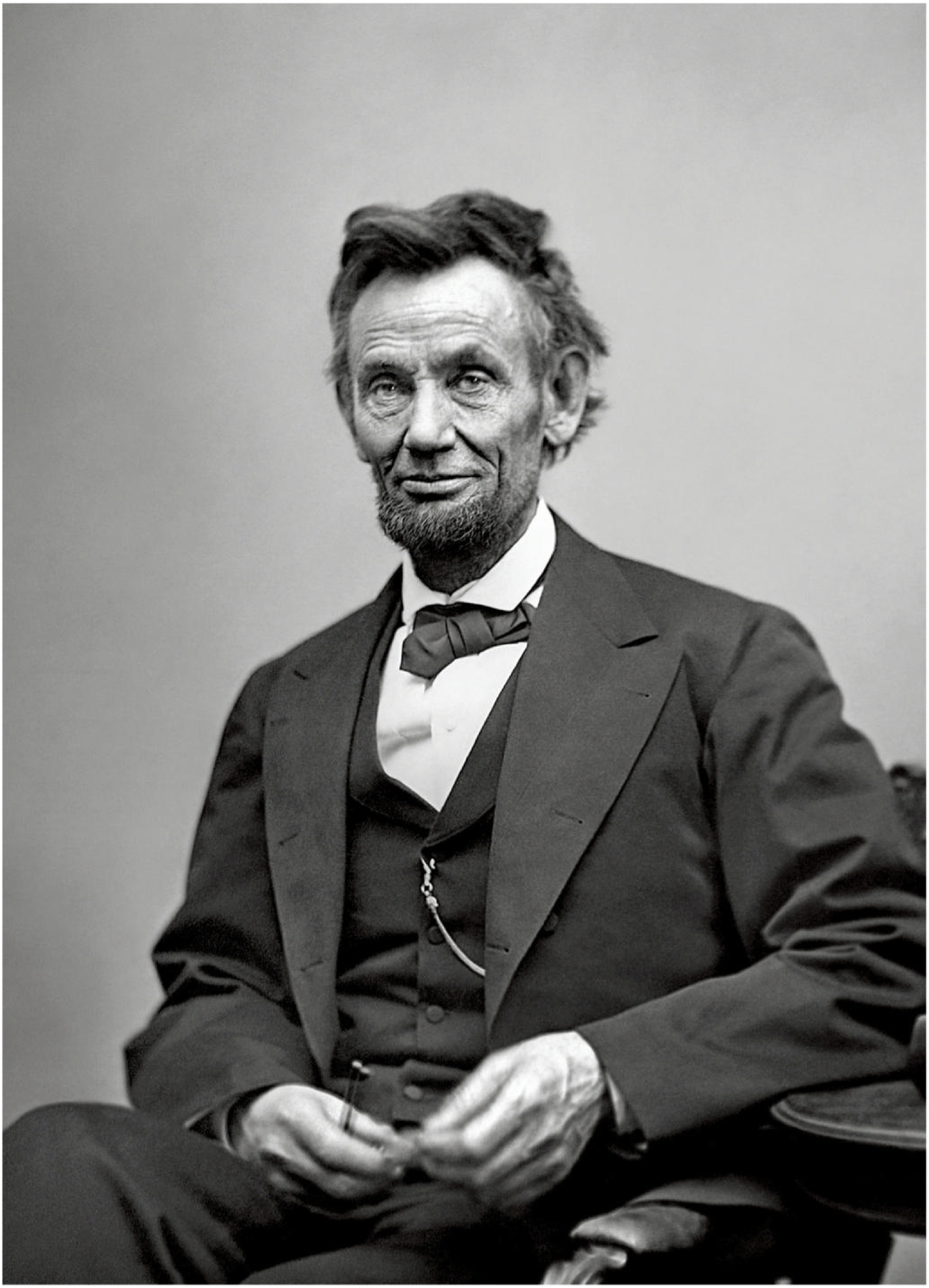
In the decades that followed, the tone of Lincoln biographies became remarkably more benign. There were hymnals in praise of Lincoln's wisdom in assembling a Cabinet of political opponents (though all Presidents in the era assembled Cabinets of their rivals) and others on the beauty of his language (though Disraeli, in London, was as good a writer in his own way, and no one was deifying *him*). Spielberg's Lincoln gave us the beatified, not the Bismarckian, President, even if Daniel Day-Lewis brilliantly caught the high-pitched, less than honeyed tones that Lincoln's contemporaries heard. In more recent years, however, Lincoln has been under assault—not for being a militarist but for not being militant enough, for not being as thorough an egalitarian as some of the radical Republicans in Congress. Newer Lincoln biographies have been needed, and the need has been met.

David S. Reynolds's Lincoln is very much an Honest Abe—the title of his book, in fact, is "Abe: Abraham Lincoln in His Times" (Penguin Press)—but he is an updated Abe, fully woke and finely radical. Indeed, Reynolds, the author of first-rate biographies of Walt Whitman and John Brown, makes much of Lincoln's wonderfully named and often forgotten Wide Awakes—legions of young pro-Lincoln "b'hoys," whose resolve and aggression far exceeded that of Bernie Sanders's army. Though Reynolds rightly recycles the metaphor of the President as a tightrope walker, we're assured that, even as the walker might list left and right, his rope stretched forth in a radically progressive direction, aligned with the hot temper of our moment.

Reynolds updates Lincoln by doing what scholars do now: he makes biography secondary to the cultural history of the country. Lincoln is seen as a man whose skin bears the tattoos of his time. Cultural patterns are explicated in "Abe," and Lincoln is picked up and positioned against them, taking on the coloring of his surroundings, rather like a taxidermied animal being placed in a reconstructed habitat in a nineteenth-century diorama at a natural-history museum. Instead of rising from one episode of strenuous self-making to another, he passes from one frame to the next, a man subsumed.

So, where scholars have long known that Lincoln was plunged into a near-suicidal depression by the early death, in the eighteen-thirties, of his first love, Ann Rutledge, Reynolds connects Lincoln's depression to a cult of "sensationalism" that swept the country, one that placed great prestige on acts of melodramatic emotion. In Reynolds's account, Lincoln's grief was, in part, a literary affect, or even an affectation, with Lincoln and Poe drinking from the same moody waters. This mapping of subject onto trope continues on through the last night of Lincoln's life. John Wilkes Booth's assassination of the President, Reynolds argues, was not only an act of terrorism on behalf of the defeated South but a kind of Method-acting exercise gone significantly wrong. Extreme self-identification of actor with role was highly valued then; Junius, the patriarch of the theatrical Booth family, was famed for the hyperintensity of his portrayals, and John, among the three Booth children who became prominent actors, most fully adopted his father's stormy style. He was pleasing Junius's ghost by enacting Brutus's killing of Caesar, in real time with real weapons.

Reynolds's cultural history illuminates Lincoln—and particularly his



ALEXANDER GARDNER; OPPOSITE: ROSE WONG

Historians' visions of the President have been shaped by their own political landscapes and cultural contexts.

transformation from self-made lawyer into American Abe. Even readers long marinated in the Lincoln literature will find revelation in the way "Abe" re-situates familiar episodes. Reynolds places Lincoln's early career in New Salem and Springfield, Illinois, in the eighteen-thirties, as a poor farm boy struggling to make himself into a middle-class lawyer, against the radical background of American sectarianism. We learn that "free thought" and "free love"—one favoring religious skepticism and the other sex outside marriage—flourished on the frontier, where folks had to make up their own institutions, including a debating club that forbade any appeal to God. Lincoln participated in both movements, declaring himself a freethinker (and apologizing for it in a fairly weaselly way later on, when he first ran for office) and acting as an early advocate for women's right to vote, and to make their own sexual choices. The young Lincoln was an enthusiastic amateur poet, and his poems are a good guide to one side of his mind: the wild, passionate side, which, Reynolds says, was a counterpart to his youthful calls for "cold, calculating unimpassioned reason." One poem defended women who'd become prostitutes: "No woman ever played the whore / Without a man to help her."

Reynolds's cultural frames become more arresting as Lincoln's role grows more public; public people are always cultural objects. Lincoln spent February 27, 1860, the day he delivered his Cooper Union speech—the speech that made him President, as he later said—at a hotel across from P. T. Barnum's museum. Reynolds reflects on Barnum and American life, and how the love of weird spectacle, what we now call the tabloidization of public people, was something Lincoln welcomed; he played up the comedy of his own appearance in a very Barnum-like way, his enormous body posed against his wife's petite one. Barnum's genius lay in taking circus grotesques and making them exemplary Americans: General Tom Thumb was a hero, not a freak. And so with Lincoln, as Reynolds writes: "His cragged face, with its cavernous eyes, large mouth and nose, and swarthy complexion; his wide ears and unruly black hair; his huge hands and feet and overly long arms and legs—these features, along with his ill-fitting clothes and awkward gait, made him seem almost as unusual as a Barnum exhibit." When Lincoln was President, his Secretary of War, Edwin Stanton, compared him to a baboon, and Lincoln, asked how he could endure the insult, said, "That is no insult; it is an expression of opinion; and what troubles me most about it is that Stanton said it, and Stanton is usually right." He saw that it cost him nothing to be an American spectacle in a climate of American sensation. (He even hosted a reception at the White House for Tom Thumb and his wife.)

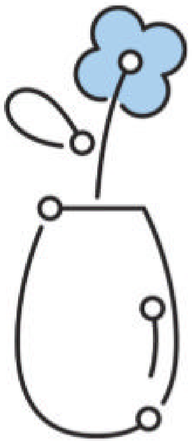
Lincoln exploited photography to a similar end, beginning on that same February day, when his portrait was taken at Mathew Brady's studio. Lincoln was usually pictured not as a polished neoclassical man, like his political rivals, but as rough and frontier-made. Americans like a craggy guy in times of crisis. (Humphrey Bogart offered a similar look in the Second World War.) Even his decision to grow a beard seemed meant to evoke a log-cabin hygiene that was then seen as a sign of sincerity. Lincoln knew how to use the expressive forms of his time as a frame for his mythology. Emerson and Whitman, Reynolds demonstrates, understood Lincoln better, as a national figure, than most journalists could. Emerson saw in him the model self-reliant man and Whitman the ideal democratic leader.

As the war begins, Reynolds's lens widens in ways that are less appealingly whimsical than in the Barnum case but still more genuinely illuminating. He explains the old puzzle of Lincoln's reluctance to fire the obstreperous and slow-moving General McClellan as a reflection of Lincoln's enthusiasm for the new technology of war. Lincoln, a backwoods man forever forward-facing, loved state-of-the-art gizmos, even urging an early machine gun upon the Union Army that it wasn't willing to use. McClellan shared Lincoln's vision of an army modernized with telegraph communications, military balloons, and railroad transportation. The choice in 1862 was not yet between McClellan and Grant; it was between McClellan and chaos. The culture of war itself becomes a subject in Reynolds's book: it explains the even-

HOW MRS. FENDLE SPENT HER SUMMER VACATION
"For the first few weeks, everything was O.K. I made paella, and Zoomed with a few people I hadn't seen since high school. After that, things took a slightly darker turn. Perhaps it was the discovery of online poker. Or perhaps..."
cat
dog
hair
R. Chst

tual turn from McClellan to Grant through a broader mid-nineteenth-century turn from elegant Napoleonic battle orchestrations to Clausewitzian frontal assaults.

Sometimes Reynolds's kind of cultural history demands more suppleness of mind than he displays. When, for instance, he proposes a parallel between Mary Lincoln locked up in the White House and Emily Dickinson isolated in her home, in Amherst, we feel that we are in the presence of a similitude without a real shape: Emily was a Yankee poet of matchless genius, Mary a bewildered Southern woman in an unmanageable role. All they shared was being alone in a big house. Elsewhere, Reynolds expresses perplexity that the pro-Lincoln satirist David Locke persisted in writing sketches in the voice of Petroleum V. Nasby, his impersonation of a Copperhead—an anti-Lincoln, pro-slavery Northerner. "Given Locke's actual affection and respect for Lincoln, it must have been very hard for him to maintain the outrageous Copperhead pose," Reynolds writes. But that's like wondering why a pro-Biden comedian would keep on impersonating a MAGA-hat-wearing Trump supporter. Sticking to the joke is what comedians *do*.



Even with Reynolds's more compelling examples of anthropological patterns, small whitecaps of uncertainty may stir in the reader's mind: a man who loses the love of his life does not need cultural license to mourn, and, though Booth undoubtedly choreographed his assassination with an eye to the crowd and to his father, his brothers Junius and Edwin were committed to the manner but appalled by his deed. Actors know overacting when they see it.

Throughout "Abe," the terms "culture" and "cultural" recur with such hammering relentlessness (four times on a single page, and in that chapter title as well) that one wishes Reynolds's editor had given him a thesaurus. Not having enough words means not seeing enough types. Culture is a diffuse thing. Reading a book, choosing a costume, adapting a rhetorical style, transferring a code of conduct from one forum to another, just laughing at a joke—each of these forms of cultural transmission has its own vibration, its own dynamic, and its own web of associations.

What counts is a sense of what counts. It's true that, as Reynolds shows in his account of sensationalism, Lincoln loved sad parlor songs, but pretty much everyone in the period loved sad songs; to make much of this is like making the possession of an e-mail address a significant cultural token today. On the other hand, although the Shakespeare whom Lincoln loved was very much the Shakespeare beloved by nineteenth-century America—a strenuous moralist, devoted to the explication of characters in extreme emotional states—Lincoln was distinctive in turning this shared Shakespeare into a template for a new kind of oratory. The passionate phrasing and sharp summations of Lincoln's speeches—"the better angels of our nature"; "of the people, by the people, for the people"—are shaped by the passionate soliloquies and monosyllabic end stops of Shakespeare's most agonized characters. (Among Lincoln's favorite passages was Claudius's guilt-ridden "Oh, my offense is rank" speech.) The interpenetration of Abe and Will is real. It is important to recognize cultural set pieces, but it's also important to see that they are malleable and self-created. Lincoln *made* his time as much as he lived in it. That, after all, is why we're reading this book.

Macro-history gives us a big picture, but politics, as "Hamilton" reminds us, happens in hidden rooms. Readers who seek the political micro-history can turn to Sidney Blumenthal's multivolume Lincoln biography, now in its third installment—"All the Powers of the Earth" (Simon & Schuster)—with two more promised. Written by someone who bears the battle scars of modern democratic politics, the volumes are all about Lincoln as a battle-scarred democratic politician. (Blumenthal, who was once a staff writer for this magazine, worked as an adviser

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to President Clinton and distinguished himself in the Ken Starr wars.) Where Reynolds's account of the most significant act in American political history—Lincoln's insurgent victory over William Seward, a senator from New York, in the Republican-nomination battle of 1860—is necessarily summary, Blumenthal offers a vividly realized, slow crawl across the Convention floor by someone who has been there.

The heroes of Blumenthal's most recent volume are the so-called Lincoln Men, a group of boosters and advisers led by David Davis and Leonard Swett, who, with a comic brio right out of Mark Twain, employed every hardball trick in the book to win Lincoln the nomination. At the Wigwam, in Chicago—an immense wooden convention hall, capable of holding more than ten thousand people, and thrown together, American style, in a month—they boxed out the Seward forces, making it physically difficult for his delegates to mingle and make deals.

The Lincolnians also courted a now often overlooked interest group, the émigré Germans, including many exiled by the failed liberal revolutions of 1848. As Blumenthal notes, Lincoln had bought a German-language newspaper, in order to appeal to those key players of the "identity politics" of the time. (It was the equivalent of surreptitiously funding Facebook pages in 2020.) The Germans refused to support anyone who was known to have a pro-nativist taint, which ruled out a lot of dog-eared veteran politicians. At the same time, the nativists spurned Seward, who, as governor of New York, had backed state subsidies for Catholic education. In the end, it all came down to a single eve-of-battle meeting in Chicago between the Lincoln Men and a group of delegates from Pennsylvania, who proposed a flat-out political swap: they'd support Lincoln in exchange for a Cabinet post going to Simon Cameron, a corrupt Pennsylvania senator. David Davis agreed. Lincoln had officially warned him off such dealmaking, but, as he memorably said, "Lincoln ain't here." (Lincoln gave Cameron the War Office, not the Department of Treasury he wanted; Davis, for his efforts, got a seat on the Supreme Court.)

As with Kennedy in 1960 and the Obama campaign in 2008, a macro-moment met micromanagement. The background in each case was the elevation of a novice with a gift for speaking, an extraordinary personal story, and a political record too short to have incurred too many grudges. The foreground was sharp dealing. Blumenthal's kind of intricate political history—providing all the details of how the sprockets and gears engage—feeds, in turn, the larger cultural perspective. It's hard to grasp, today, the extent to which those émigré Germans were perceived as the soul of the educated élite. (In Louisa May Alcott's "Little Women" series, it is the idealized German—and perhaps Jewish—Professor Bhaer, with his heavy accent and love of Goethe, who rescues Jo from conventionality and joins her in building a progressive school.) It may be an obvious truth, but it is still a truth worth telling: history needs both micro-political and macro-cultural perspectives. The room where it happened is part of a world where it could.

Reynolds's macro-history and Blumenthal's micro-history coincide in their vindication of Lincoln as a profound radical. Lincoln was a single-issue candidate and a single-cause politician; that issue was slavery and the cause was its abolition. But he was a politician, not a polemicist: he created a broad coalition and placated its parts. He was a pluralist rather than a purist.

His central understanding, registered in his home base of Springfield—where, Reynolds shows, there was a lot more African-American political activism than has often been imagined—was that racist Northerners who could not be driven to equality could still be coaxed toward humanity. Abolition annealed to a broader "Americanism"—an understanding of equality as rooted in the sacred documents of the country—might produce emancipation. This was an insight that Lincoln, with Machiavellian shrewdness, drove to an armed point. Lincoln was not a centrist politician who happened to find himself on top of an erupting volcano in 1861; his election caused the eruption. As Blumenthal shows, Lincoln, in his 1858 debates with the racist senator Stephen Douglas, tactically conceded points about segregation: "I do not understand that because I do not want a negro woman for a slave I must necessarily want her for a wife." But he was emphatic on the central point, that "there is no reason in the world why the negro is not entitled to all the natural rights enumerated in the Declaration of Independence—the right to life, liberty, and the pursuit of happiness. I hold that he is as much entitled to these as the white man."

In a speech in Peoria, Lincoln declared, about the indifference toward slavery he saw in Congress, "I hate it because of the monstrous injustice of slavery itself. I hate it because it deprives our republican example of its just influence in the world . . . and especially because it forces so many really good men amongst ourselves into an open war with the very fundamental principles of civil liberty." Reynolds, quoting this passage, remarks that "Lincoln's loathing of slavery comes through as strongly here as it does in any work by the most radical abolitionist." What separated Lincoln from most other abolitionists was the absence of rhetoric that was intended to frighten as much as teach—what Reynolds calls "dark reform" rhetoric—or that catalogued, graphically but accurately, the physical horrors inflicted by slave masters.

This wasn't because Lincoln did not know of these horrors. It was because he understood that moving the masses of the North to abolition could be done only by appealing to fundamental principles—reminding them that their own values were being violated, not merely another group's interests. Reynolds writes that Lincoln, aware of the risks of the kind of nihilistic bloodletting that John Brown would produce, directed "this potentially anarchistic cultural current into two documents treasured by most Americans: the Declaration of Independence and the Constitution." By linking the fight against slavery to the extension of these documents, rather than to their repudiation, he could build a truly broad antislavery coalition—and an army brutal enough to enforce its mission. Every act of his Presidency, from the gathering of the militias to the speech at Gettysburg, moved toward this end.

It worked, at a price. For Lincoln,

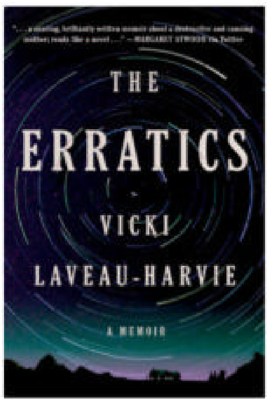
the critical issue was the abolition of slavery; racism and its constraints were, for the moment, secondary. Reynolds addresses Lincoln's supposed racism in considering colonization programs for freed slaves, noting that Martin Delany, the most radical Black activist of the time, had also championed relocating Black people away from the degradations they faced here. It was a back-to-Africa sentiment, a kind of Black Zionism, that both Lincoln and Delany contemplated. Similarly, Lincoln's notorious letter to the New York newspaper editor Horace Greeley, saying that if he could save the Union without freeing any slaves he would do so, is situated as part of an ongoing joust between Lincoln and Greeley—and, Reynolds says, as a way for Lincoln to garb "his radical antislavery position in the dress of military necessity."

An unexampled source on the subject of Lincoln at war—what it cost him and what he really believed—remains John Stauffer's "Giants," a 2008 study of Lincoln and Frederick Douglass. And the best summation of Lincoln is still the oration delivered by Douglass in 1876 on the unveiling of a monument to the freed slaves:

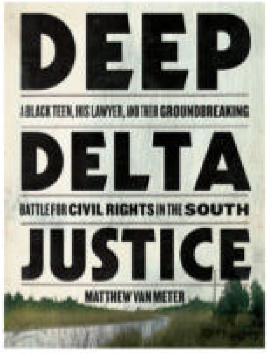
> Despite the mist and haze that surrounded him; despite the tumult, the hurry, and confusion of the hour, we were able to take a comprehensive view of Abraham Lincoln, and to make reasonable allowance for the circumstances of his position. We saw him, measured him, and estimated him; not by stray utterances to injudicious and tedious delegations, who often tried his patience; not by isolated facts torn from their connection; not by any partial and imperfect glimpses, caught at inopportune moments; but by a broad survey, in the light of the stern logic of great events, and in view of that divinity which shapes our ends, rough hew them how we will, we came to the conclusion that the hour and the man of our redemption had somehow met in the person of Abraham Lincoln.

Sometimes cultural works, novels and plays, can tell you more about the history of culture than cultural history can. George Saunders's universally praised novel "Lincoln in the Bardo" (2017) creates an imagined Lincoln for our era that more literal accounts can only reinforce and echo. Saunders's novel, an oratorio of fragments sung by American ghosts huddled in a graveyard, crowding around

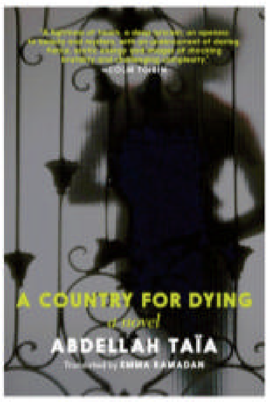
BRIEFLY NOTED



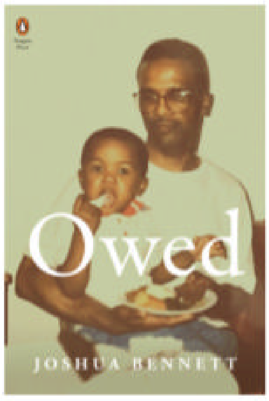
The Erratics, *by Vicki Laveau-Harvie (Knopf).* This atmospheric memoir finds the author returning home to Alberta, Canada, to help her sister manage their aging parents. They must put their lying, manipulative mother in an institution, in order to excise her from the life of their vulnerable, enabling father. The mother is the book's hollow center; a compassionless parent and a compulsive scammer, she invents family members and then kills them off for sympathy. Laveau-Harvie does not dig much into the reasons for this cruelty, or into her own backstory, finding that her early years are "like the blank bit that airplanes routinely plummet through and recover from." The result—the rare memoir unobsessed with memories—is sometimes infuriating but always enthralling.


DEEP
A BLACK TEEN, HIS LAWYER, AND THEIR GROUNDBREAKING
DELTA
BATTLE FOR CIVIL RIGHTS IN THE SOUTH
JUSTICE
MATTHEW VAN METER

Deep Delta Justice, *by Matthew Van Meter (Little, Brown).* In 1966, as school integration roiled the South, the mother of Gary Duncan, a nineteen-year-old African-American in Plaquemines Parish, Louisiana, told him, "Trouble is easy to get into but hard to get out of." This history revisits the prosecution of Duncan on a charge of battery, after he touched a white boy's arm while intervening in a fight. The case was driven by a cigar-chomping, Panama-hat-wearing local politician, "the most notorious racist in the state"; with the help of a Columbia-educated civil-rights lawyer, it went all the way to the Supreme Court, which exonerated Duncan. Van Meter argues that the case was an exemplar of a "criminal procedure revolution" that brought federal standards to state courts.



A Country for Dying, *by Abdellah Taïa, translated from the French by Emma Ramadan (Seven Stories).* In this novel of intersecting lives, set in Paris, Zahira, a Moroccan immigrant and a sex worker, is haunted by her father's suicide and the disappearance of her aunt. Her trans friend, born Aziz, longs for the surgery that will allow him to become Zanouba. The city appears both as a glittering, bourgeois metropolis and as a colonial power that consumes the lives of immigrants. The characters take comfort in their shared experiences of alienation. "As strange as it must seem, I always feel a certain pleasure with them," Zahira says of her clients. "I feel like a sister to these Arab and Muslim men."



Owed, *by Joshua Bennett (Penguin).* Themes of praise and debt pervade this rhapsodic, rigorous poetry collection, which pays homage to everyday Black experience in the U.S. Poems like "The Book of Mycah" and "Owed to the Plastic on Your Grandmother's Couch" exalt childhood memories, but also bear witness to oppression and loss. Bennett's devotionals are demands, too: "The Next Black National Anthem" and "America Will Be," along with a series called "Reparation," riff on the idea of compensation for historical and ongoing harm. Bennett conjures a spirit of kinship that, illuminated by redolent imagery, borders on mythic, and boldly stakes claim to "some living, future / English, & everyone in it / is immortal."

(and, creepily, inside) Lincoln himself as he mourns his son Willie, who died in 1862, makes that death the center point of Lincoln's journey.

Reynolds, in turn, reveals that Spiritualism—hard-core, table-rapping Spiritualism—really was a presence in the Lincoln White House. The movement, as American as Mormonism, had begun in the eighteen-forties with the Fox sisters and their pet ghost, Mr. Splitfoot, and by the eighteen-seventies had millions of adherents. Poor Mary Lincoln, after losing Willie, consulted Spiritualists who claimed to commune with the dead, and held séances in the White House, which her husband seems to have attended. Abe himself took seriously the political counsel he got from two leading spiritmongers, though not from their spirits.

However clearly stage-managed, this cult of an accessible afterlife gave to the tragedies of the war a set of redemptive possibilities that normal religiosity couldn't quite contain, and adds to our understanding of Civil War mourning. Reynolds even includes a hair-raising, and heartbreaking, "spirit" photograph of Mary Lincoln with Abe's ghost, contrived for her years after his death. The obviousness of the fraud does not alter the pathos of the embrace, the tall man's hands placed on the small woman's shoulders. The phony and freakish treated as heroic and elegiac—these elements, the materials of Melville's "The Confidence-Man," are the materials of mid-nineteenth-century American culture. Lincoln's legend sits right there among them.

Saunders's ghosts include those of soldiers killed in the war, reproaching the President as he mourns his own child. There is a terrible Providence in the Lincolns' undergoing the same kind of loss that so many less celebrated Americans had to endure. The ghosts did indeed live alongside the living. Surely the belief in ghosts was, in part, a way of registering the mass killing of ordinary boys—and their persistence as a constant harrowing of the soul. All wars leave a hideous deficit, but the Civil War somehow left one uniquely deep. To grasp why the comedy of séance-table Spiritualism was not comedy at all, one must reckon with the scale of the killing—proportionally, it is as if eight million Americans were killed in a war now. And, perhaps, above all, one must reckon with the adjacency, the nearness of the places where these farm boys and working men with wives and babies were slaughtered to the places where they had lived: they died not in a foreign glade or on a distant shore but in a hayfield across the state border.

Lincoln was a pluralist politician negotiating a world resistant to pluralism of any kind. He achieved great things through compromise and cunning and occasional cruelty. The choice between pluralism and purism remains the defining choice between liberalism and its enemies. It is why, astoundingly, John Wilkes Booth adored John Brown. They spoke the same language of absolutism.

With the recent degradation of the American Presidency—our four-year nightmare has provided no spectacle more nightmarish than that of Trump sitting at Lincoln's feet, in his memorial, for a self-pity session—it is a truism to say that we need Lincoln again. But which one? Three possible Lincolns come to mind. Call them a Barnum Lincoln, a Bardo Lincoln, and a Wigwam Lincoln.

The Barnum Lincoln shows us that a vigorous thread of vulgarity ran right through Lincoln's life and public persona, and appropriately so for a democratic leader. Though not a vulgarian himself, Lincoln saw the value of vulgarity. The sepulchral Lincoln of Daniel French's statue was not the Lincoln his contemporaries knew and loved. One of the actors in "Our American Cousin," seeing the First Couple arrive in their box not long before the President was killed, ad-libbed the line "This reminds me of a story, as Mr. Lincoln says . . . ," to great and appreciative laughter. This was the Lincoln his time knew: ribald storyteller, fabulist, beloved Barnum-style freak. It is a Lincoln worth keeping in mind for those of us inclined to bemoan the "debasement" of our political culture. (The trouble with Trump is not that he's a short-fingered vulgarian showman; the trouble is that he is *only* a short-fingered vulgarian showman.)

It is the Bardo Lincoln who radiates moral authority from his time into our own, exactly because he was one of those rare leaders who could stare directly into their complicity in death and suffering without attempting to weaken or lessen its horror. Lincoln was in intimate touch with the suffering he made happen, and he sought every day to justify it, to himself and to the country. He sensed from very early on that he would never go home to Illinois; the spectre of assassination was constant throughout his Presidency, and his legendary dream of death in the White House is a sign that he accepted this. The British philosopher and Lincoln lover John Stuart Mill wrote soon after the President's death that there was something almost salubrious in his dying just as the war was won. Shocking as it sounds, Mill meant that, in some almost providential way, the arc of Lincoln's life demanded his martyrdom to complete it. This Lincoln, the man of sorrows acquainted with grief, is central to understanding the spell he continues to cast on us.

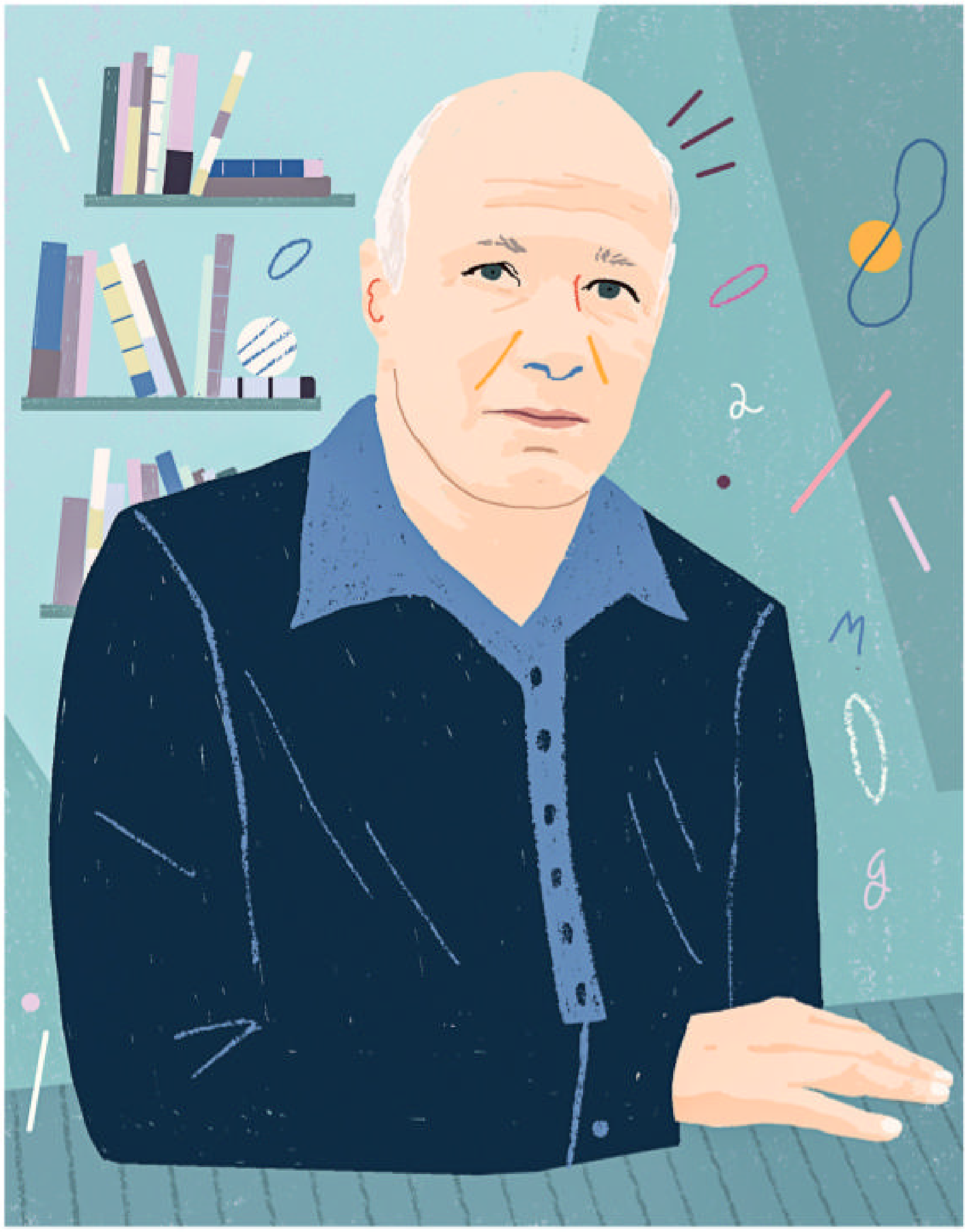
If there's a Lincoln we need now, though, it must be the Wigwam Lincoln, the pol who pretended to oppose dealmaking in the boozy Chicago night, even as his ambition demanded it. That's the ghost to haunt us—master politician, always placating one side in order to broaden a path to another, misdirecting and redirecting, building and rebuilding coalitions, all of it guided by shrewd insight into other people's foibles and needs. What really distinguished Lincoln from the other Presidents who built Cabinets of rivals was that, instead of struggling against them politely, he played them like a piano. He expected to lose the election of 1864, and hatched an apparent plot—involving a secret letter that he demanded his Cabinet sign, unseen—to get as many slaves freed as possible if he did. (And then the election of 1864 was duly held, in the middle of a war, with millions of voters, and no one has ever had cause to question its legitimacy.) Lincoln will not return from the dead, even as a ghost, but his broadly balanced, extravagantly compromised democratic pluralism may be all there is to rescue us yet again. Something has to, soon. ♦

BOOKS

CRITICAL DISTANCES

Enduring desires in the poetry of Henri Cole and Eduardo C. Corral.

BY DAN CHIASSON



In "Blizzard," Cole traces agonizing cycles of longing with strange serenity.

During the winter of 2016, after the *Times* sent out disposable virtual-reality headsets to its subscribers, the rooms of our house filled up with animated beasts and haunted dolls. "Look at that!" you would exclaim, pointing at a pile of laundry. In the chintzy transformations of augmented reality, our children became insects, foxes, muffins. I could make domestic life temporarily thrilling or scary, then reverse the current and make it humdrum again. Soon, the estrangement itself came to seem banal. The crumpled cardboard glasses are in a drawer someplace.

In "Blizzard" (Farrar, Straus & Giroux), the tenth book of poems by Henri Cole, ordinary life shares a plane with the eerie, the uncanny, and the berserk. A menagerie of cats, snails, flies, bees, and other creatures fills these poems, acting simultaneously as heralds bearing news and scavengers feasting on our bodies. A bat trapped in Cole's kitchen chirps out a motto: "*accept and forgive, / accept and forgive*—." Visiting the grave of a friend, and in a sombre mood, Cole greets a stray "mommy cat." She humps his leg while "meowing" a grim report: "*Bliss, / loss, trembling, compulsion, desire, / & disease are but coffin liquor now.*"

"Blizzard" is a retrospective volume, seasoned by loss and disappointment. "It's a long game— / the whole undignified, insane attempt at living," Cole writes. Long and also unwinnable, as the many elegies for friends in this book remind us. "I want my life to be post-pas de deux now," Cole writes, in "Kayaking on the Charles." That lonely vow at least provides a reset. In "Recycling," an animal carcass stands in for Cole's own body, also destined for the ground: "I have no biological function and grow / like a cabbage without making divisions / of myself." But poetry, with its formal imperative to start over, line after line, offers a renewed imaginative function. Post-sex, pre-corpse, the body has outgrown not only its old uses but its worn-out metaphors. "There's more enterprise / In walking naked," Yeats wrote, in middle age, casting his stylistic frippery aside. Cole echoes him in a near-prayer: "Lord, look at me, / hatless, with naked torso, sixty-ish, paddling alone upriver."

Cole's new poems practice a weirdly vigorous stoicism: their serenity seems like one of the terms of a treaty signed with panic. Cole is pacified rather than peaceful, the discipline in his style arising from a deep fear that he is capable of ruthlessness, and even of violence. "In loneliness, I fear me," Cole writes, "but in society I'm like a soldier / kneeling on soft mats." Routine actions are seized with sudden menace: "I cut open the throat of a grapefruit." The mantras of the beatified self compete, everywhere, with the more desperate, and more convincing, slogans of impulse: "Don't want, can have. Can't have, want."

The rule pertains even to the desire to be free from the rule. The agonizing cycles of longing play out in a brilliant series of poems about the AIDS crisis and its aftermath. When a "handmade / silk tie" appears in the trash, it seems to cry "*keep me*," and calls to mind the voices of old friends and lovers, "Mason, Roy, Jimmy, / and Miguel," tugging at Cole's arms "like it was / the '80s again." An elegy for a friend, "Epivir, d4T, Crixivan," its title a reference to an antiretroviral cocktail, brings back the freak mortal logic of that era: "To those who didn't / sell well in the bars, it felt like Revenge of the Nerds." Those who did are, as Cole puts it, "memory now."

"Blizzard," like many of Cole's recent books, is full of sonnets. He has made the form his own: often they begin loose-limbed and amiable, with an anecdote,

ILLUSTRATION BY CHIARA LANZIERI

then fall through a trapdoor of reminiscence and rue. “Face of the Bee” is a tense standoff between the insect, emerging from a cut peony, and Cole, in his kitchen, spreading jam on toast. They’re not so different, these two antagonists:

> . . . No one
> Is truly the owner of his own instincts,
> but controlling them—this is civilization.
> I thank my mother and father for this.
> After they died, there were replacements
> whose force upon my life I cannot
> measure.

The parroted truism is dangerously naïve: elsewhere, in highly personal poems about the Reagan and Trump Administrations—the ravages of the AIDS epidemic and the crises of migrants and refugees—we see what kinds of cruelty go by the name of “civilization.” The “instincts” that Cole’s parents taught him to control were surely, in part, sexual. Cole’s deadpan shout-out hints at a gay son’s lingering mixture of emotions, whose precise and beautiful measurement only these loosely metered poems can take. Better the devil you know: those “replacements” sound ominous, a “force” so large and malevolent that, unlike poetry, it cannot be measured.

Cole began as the prisoner of a grand formalism. In his fourth book, “The Visible Man” (1998), he announced, a little archly, that he’d broken free. But it was only with “Middle Earth” (2003) that he began to follow a long-implied precept, finally articulated in “Blizzard”: to “be precise about objects, but reticent about feelings.” Cole’s interiority is distributive, resting in oddly sentient neckties, rice puddings, and dandelions, each a repository of his imagination. The dreamer, as the old saw goes, is every figure in the dream. What can a poem with a roaming perspective do that a unifocal poem cannot? It can depict the self from tangential or peripheral moral angles: to the bee, a person is a threat; to flies, he’s food; to the current President, he’s collateral.

The poems in Eduardo C. Corral’s second book, “Guillotine” (Graywolf), are mostly set in and around the Sonoran Desert, where, as a result of U.S. government policies, thousands of migrants have died trying to cross to safety. Their remains are often unidentifiable. Corral grew up in southern Arizona, in the town of Casa Grande, between Phoenix and Tucson. Before publishing his first book, “Slow Lightning,” the 2011 winner of the Yale Younger Poets Prize, Corral wrote in a local Starbucks.

These poems begin from the premise that the person writing them, with his freight of interiority, a childhood that haunts him, unrequited passions, a keen loneliness, and a fearsome imaginative gift, might with different luck have met a very different fate:

> . . . Bodies, in the Sonoran desert,
> are everywhere
> A headless corpse
> sporting a T-shirt
> that reads: Superstar.

You “sport” an outfit when you like the way it looks on you. “Superstar” once singled you out as a celebrity, but it long ago became a term we use to designate the kindness or forbearance of quite ordinary people. A “Superstar” T-shirt feels like something a parent might pick out before a child even has a veto.

A striking long poem is one of the anchors of this book. In “Testaments Scratched Into a Water Station Barrel,” Corral gives voice, in Spanish and English, to migrants as well as to a few racists. The poem asks us to imagine each page as one of the fifty-five-gallon water stations set up by a nonprofit to help migrants survive in the desert. Corral’s texts are “scratched” onto the surface of the tank, each inscription effacing the last. Every new poem feels like an arena for survival; we imagine a person either desperate to live or eager to kill.

Reduced to its bluntest purpose, all writing is a form of graffiti, an assertion that we exist in this time and place. These “found” poems of Corral’s arrive damaged, their syntax sometimes broken into mismatched columns, the type smudged or overwritten, but their strange beauty remains intact. “Out of clay I shape / sparrows,” one anonymous soul confides:

> I give them names
> like gossamer
> inglenook lagoon
> she bathed
> a trumpet
> in milk

The lyricism of this writing pulls us toward wonder, before, an instant later, documentary fact returns us to horror: “I notch my arms / I notch my thighs / five six days.”

Corral’s choral presentation of desert voices incorporates his own. In the title poem, the Arizona landscape turns up in the subconscious, as Corral follows a pair of nightmarish scorpions moving a razor blade down his body. He grips his mattress, one of the few reminders that he is indoors, in relative safety. The creatures are there to thwart desire—perhaps queer desire in particular. When Corral recalls “dragging my thumb / through his beard, / coppery & difficult,” the scorpions, a gleam in their eyes, “tilt / the blade”:

> It’s my task to stop yearning
> for as long
> as it takes them
> to carry a blade
> across my skin.

The conceit makes the length of the body a measurement of time’s excruciatingly slow pace. Corral, turned on, cannot help but recall the ambience of a love affair “from monsoon storms / to accordions / to pecan groves.” But a seeming boast—“I begin to sense / the enormity of my body”—is, in fact, a lament. The bigger the body, the longer the ban, until the desire to feel desire becomes too much to bear: “The blade / high in the air. / For now.” The potential punishment creates the sin.

Reading Cole and Corral side by side, you find, everywhere, poems about the periodicity of desire, its alternating flights and crashes, in both private and political spaces. The body, given away to lovers, is reclaimed, though transformed into a subject for speculation, appraisal—and, finally, for poetry. In an extraordinary poem, “Córdoba,” Corral reaches out toward his reflection in a mirror, but stops just before his fingertips meet. That’s the moment when what Cole calls “civilization” crops up, in the form of a father’s prohibition, internalized by his son. “Then I remember,” he writes:

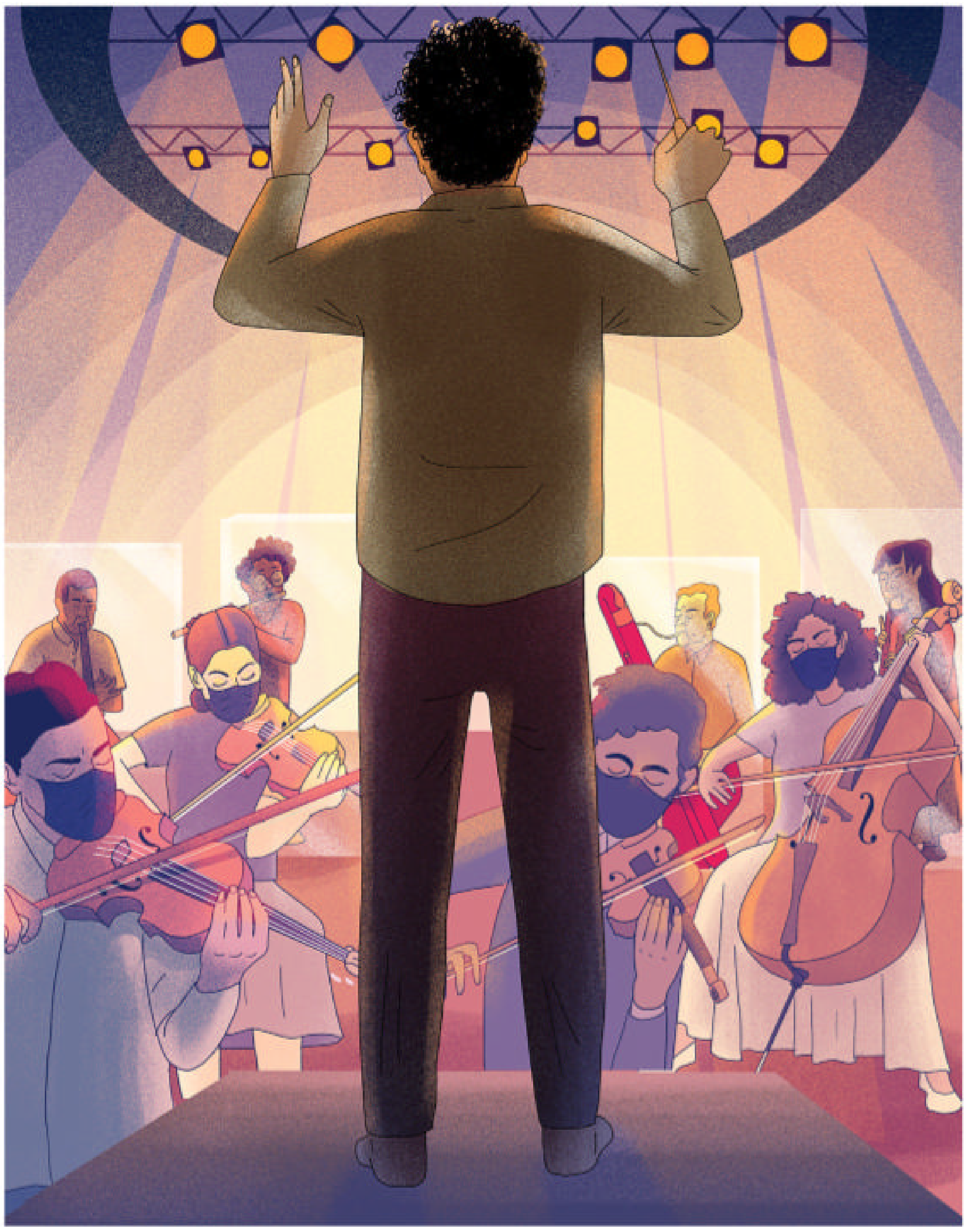
> I don’t touch mirrors. It’s wrong,
> my father always said,
>
> to touch a man. ♦

MUSICAL EVENTS

SOLO FOR ORCHESTRA

The L.A. Philharmonic, live at an empty Hollywood Bowl.

BY ALEX ROSS



An orchestra member said, "I wasn't the only one who teared up at that first chord."

At nine-thirty on the morning of August 1st, thirty-eight members of the Los Angeles Philharmonic gathered onstage at the Hollywood Bowl, in the Hollywood Hills, to play the final movement of Maurice Ravel's "Mother Goose" Suite. It was the first time that an appreciable number of L.A. Phil musicians had played together since the COVID-19 lockdown began, in mid-March, and elaborate preparations were necessary to insure safe conditions. All performers and staff were tested beforehand, and their temperatures were taken upon entrance to the Bowl. Socially distanced changing areas had been organized. Signs backstage marked one-way lanes. Members of the wind and the brass sections, who cannot wear masks as they play, sat behind custom-built three-sided Plexiglas enclosures. Musicians were placed much farther apart than usual. They would have to find new ways of following one another once the performance unfolded.

After this low-key frenzy came the relatively normal moment when Gustavo Dudamel, the orchestra's music and artistic director, gave the downbeat for the first bar of the Ravel: pianissimo C major in the strings, marked "*Lent et grave*," or "Slow and serious." Later, I asked several of the musicians what they had felt. Carolyn Hove, the orchestra's veteran English-horn player, told me, "I wasn't the only one who teared up at that first chord—an incredible relief of being able to make music again with my colleagues." Ben Hong, the associate principal cellist, said, "There was something so incredibly poignant about playing *that* piece, in that moment. Looking out and seeing nobody in the Bowl—it wasn't for the audience, it was just for us. It was maybe the purest musical experience I've had in the Bowl, or anywhere." Dudamel said, "That first chord—we were in tears. The music was very tender, but there was also such a power in it—proof that we as a group of human beings could move forward."

The L.A. Phil wasn't performing solely for its own benefit, though. The orchestra is launching a series of nine online videos, "SOUND/STAGE," which will begin airing weekly on September 25th. The project is described as a "collection of concert films and interviews, essays, and artwork," interspersing orchestra outings with sessions by the jazz artist Kamasi Washington, the singer Andra Day, and the band Chicano Batman. The repertory includes Beethoven's Seventh Symphony, Gershwin's "Rhapsody in Blue," the Adagietto from Mahler's Fifth Symphony, and recent pieces by Thomas Adès, Gabriela Ortiz, and Jessie Montgomery. All performances in the series were rehearsed and filmed over five days in early August.

I observed two days of the sessions and felt my own rush of emotion at seeing an orchestra in person for the first time since early March. I'd watched dozens of estimable performances online, but it was another matter to be in the presence of live musicians. The first piece I heard was Adès's "Dawn," a freshly composed pandemic-era score, subtitled "Chacony for Orchestra at Any Distance." Free of Adès's customary harmonic and rhythmic complexities, it is an airy, wistful, gently swaying miniature, its slow triple meter recalling Satie's "Gymnopédies." The physical warmth of the sound, resonating in the Bowl's amphitheatre, was what I had been missing in months of listening to broadcasts and Webcasts. Adès's music

ILLUSTRATION BY LILY PADULA

blended into the morning light, swelling to brief brilliance and then flickering into silence.

Since the pandemic struck these shores, the situation for American classical music, as for the rest of the performing arts, has been one long, deepening agony. Orchestras and opera houses have been almost completely inactive throughout the spring and summer. Some of them have effectively given up the idea of a fall 2020 or a spring 2021 season. How many institutions will be able to return to what they were—or return at all—is an open question. Feelings of frustration and despair are heightened when musicians look across the ocean to Europe, where both outdoor and indoor performances have resumed. The Salzburg Festival succeeded in putting on a month of concerts and opera, including a production of Richard Strauss's gargantuan "Elektra."

Hove, who is in her thirty-third season with the L.A. Phil, told me, "What hurts so much is that it didn't have to be like this. We could have nipped it in the bud, and we could all be going back to work in October. But, because the handling of this at the federal level has been so catastrophic, this is where we are. And what's so unsettling, so very unsettling, is we have no idea when it is going to end. I think especially about the younger people, the freelance musicians, the dancers, the singers . . ." Her voice trailed off. "It's a bit scary. It's a *lot* scary."

Performing-arts institutions faced enormous financial setbacks from the moment the shutdown began. The L.A. Phil faced a bigger problem than most, being more dependent on ticket revenue than many ensembles its size. Ordinarily, this is a sign of the orchestra's robust health—it relies less on the largesse of big donors—but during the pandemic the abrupt end of performances created a deficit that grew by the day. With the cancellation first of the spring season and then of the lucrative summer Bowl season, the orchestra was facing a shortfall of more than eighty million dollars. Many employees were laid off or furloughed; others received pay cuts; musicians' salaries were reduced to sixty-five per cent of minimum scale.

During the spring and the summer, I checked in several times with Chad Smith, who had become the C.E.O. of the L.A. Phil only last October. A Pennsylvania native who trained as an opera singer, Smith has been with the orchestra almost continuously since 2002, when, at the age of thirty, he arrived to work on its new-music series and on classical programming at the Bowl. He played a decisive role in establishing the L.A. Phil's reputation as one of the world's most adventurous major orchestras—arguably, the boldest of all. "This isn't how I envisioned my first year going," Smith told me, ruefully, in May, during a walk in the area of Lake Hollywood. "We had all these big plans, but right now it's just a question of keeping our heads above water. Everything we're doing, from morning until night, is just about figuring out a plan on the financial front—above all, a plan for our musicians."

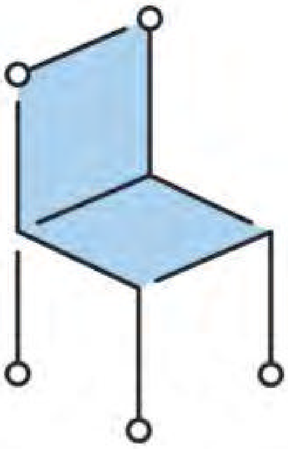
EAT AT RAY'S
EAT AT JOE'S
Hafeez

By early summer, an emergency budget was in place, allowing Smith and his staff to begin thinking about concerts again. At first, they thought that the orchestra could return to the Bowl with a socially distanced audience, but an acceleration of the pandemic in Los Angeles County in June and July ruled that out. The events would have to be virtual, and Smith wanted to find a fresh approach to the format. "Online is its own medium, and we have to adapt to it," he said. "It can't be a few fixed cameras and closeups for solos. We have to give a sense of our mission as an orchestra. With so much out there to be consumed, why *this* music, now?"

When the lockdown began, the L.A. Phil had just completed a survey of the symphonies of Charles Ives—Deutsche Grammophon recently released a digital album of those concerts—and was in the middle of an ambitious festival, Power to the People!, emphasizing African-American music and themes of musical activism. One "SOUND/STAGE" program will have the same title, and it will reprise Jessie Montgomery's "Banner," a skeptical musical fantasia on the national anthem. Orchestras have been scrambling to diversify their programming in the wake of Black Lives Matter protests; the L.A. Phil has less ground to make up in that regard. It also has the advantage of a conductor who speaks to a wide audience with unusual urgency.

Dudamel stayed in Los Angeles throughout the early months of the pandemic. The conductor who first thrilled audiences with his boyish energy fifteen years ago is now a bit gray around the temples; from certain angles, he is almost statesmanlike. He has undergone upheavals political and personal. In 2017, his criticism of the Maduro regime in Venezuela effectively broke off his relationship with his native land. Nonetheless, he remains ebullient, and in rehearsal he seemed to be releasing pent-up conductorial energy, peppering his remarks with lively metaphors and inside jokes. "O.K., good, we all finished pretty much at the same time," he told the players, who responded with laughter. In quest of more characterful phrasing in "Rhapsody in Blue," he said, "It needs more cigar." Looking out at the scattered technicians and staff in the Bowl, he asked, “Is everyone comfortable? Do you have your wine and popcorn?”

In Dudamel’s dressing room, he talked about the orchestra’s predicament and promise. “Now is the time to experiment, and there is no choice but to experiment,” he said. “We have to cross a lot of bridges to arrive at normality. And I wish that we do not arrive to the previous normality. My wish is that we arrive to a new normality, where the things that we do make more sense to the community.” He pointed out that although the orchestra had been publicly dormant for several months, its musicians had been active in teaching and mentoring members of Youth Orchestra Los Angeles, which is modelled on El Sistema, the youth-orchestra system in Venezuela where Dudamel got his start as a conducting prodigy.



“I think—no, I know—that the orchestra will come back from this stronger and better than before,” he told me. “They have learned a new way to play, spread out like this onstage, listening harder to one another. Once we get back together, sitting close again, there will be an incredible new energy. I am sure of this, I can already hear it.”

The L.A. Phil has released two previews of its “SOUND/STAGE” series, including the finale of “Mother Goose.” The videos, directed by James Lees and Charlie Buhler, of the Los Angeles production company Doomsday Entertainment, have a great deal more motion than one is accustomed to with classical-music performances. Camera operators slink around onstage and capture tight closeups of the players. Drones deliver vertiginous overhead perspectives and wide-angle shots with downtown Los Angeles in the background.

At times, the filming proved distracting for the players. Carolyn Hove told me that she was worried that a camera operator might trip and fall onto one of her colleagues. For her, this added yet another challenge to the peculiarity of playing in a spread-out formation, behind a plastic shield. “My sound was just bouncing back at me,” Hove said. “I couldn’t really hear much. I had to trust in the fact that Gustavo looked pretty pleased.” Ben Hong commented that it felt more like playing in a string quartet: “When you can hear only yourself and the people right around you, you take more responsibility that each note is well placed and well played. When you’re in a big section, there’s strength in numbers, and you can hide in that. This time, I felt this isolation onstage, and that’s what we’re all going through—the isolation of this time.”

Strikingly, the videos don’t try to hide the strangeness of the moment. A palpable melancholy hangs over the sight of the musicians playing inside an empty amphitheatre—an atmosphere that all the players I talked to commented on. The violinist Bing Wang, who is the associate concertmaster, told me, “Just driving to the Bowl that first day, with no traffic in Hollywood, and seeing the place so deserted—it was very sad, very emotional.” The videos somehow register the orchestra’s yearning to be reunited with its audience—a perhaps subliminal signal for viewers to do what they can to support the institution in a period of crisis.

Each of the episodes doubles as a kind of digital magazine, and comes with interviews and additional materials. In an episode titled “Finales,” Dudamel converses with the Mexican film director Alejandro Iñárritu. Sitting alone in the seats at the Bowl, speaking in Spanish, they talk about the nature of endings, and Dudamel asks whether the director knows in advance how a film he’s making will end. Iñárritu answers that he has a sense of purpose but not a precise destination in mind. Otherwise, he says, “instead of being a traveller, you become a tourist, you know?”

Dudamel, for his part, muses on “Mother Goose.” Ravel wrote it for four-hand piano, finishing it in 1910, and when he orchestrated it, a year later, the finale took on new poignancy and depth. “One of the crescendos is one of the most emotional crescendos in the history of music,” Dudamel says. “Ravel didn’t perhaps know where he was headed. He had the seed there, but he didn’t know what that music would become.” The camera then follows the conductor as he walks down a hallway and onto the stage, into a strange new world. ♦

PROMOTION

THE REAL ACTION IS OFF THE FIELD.

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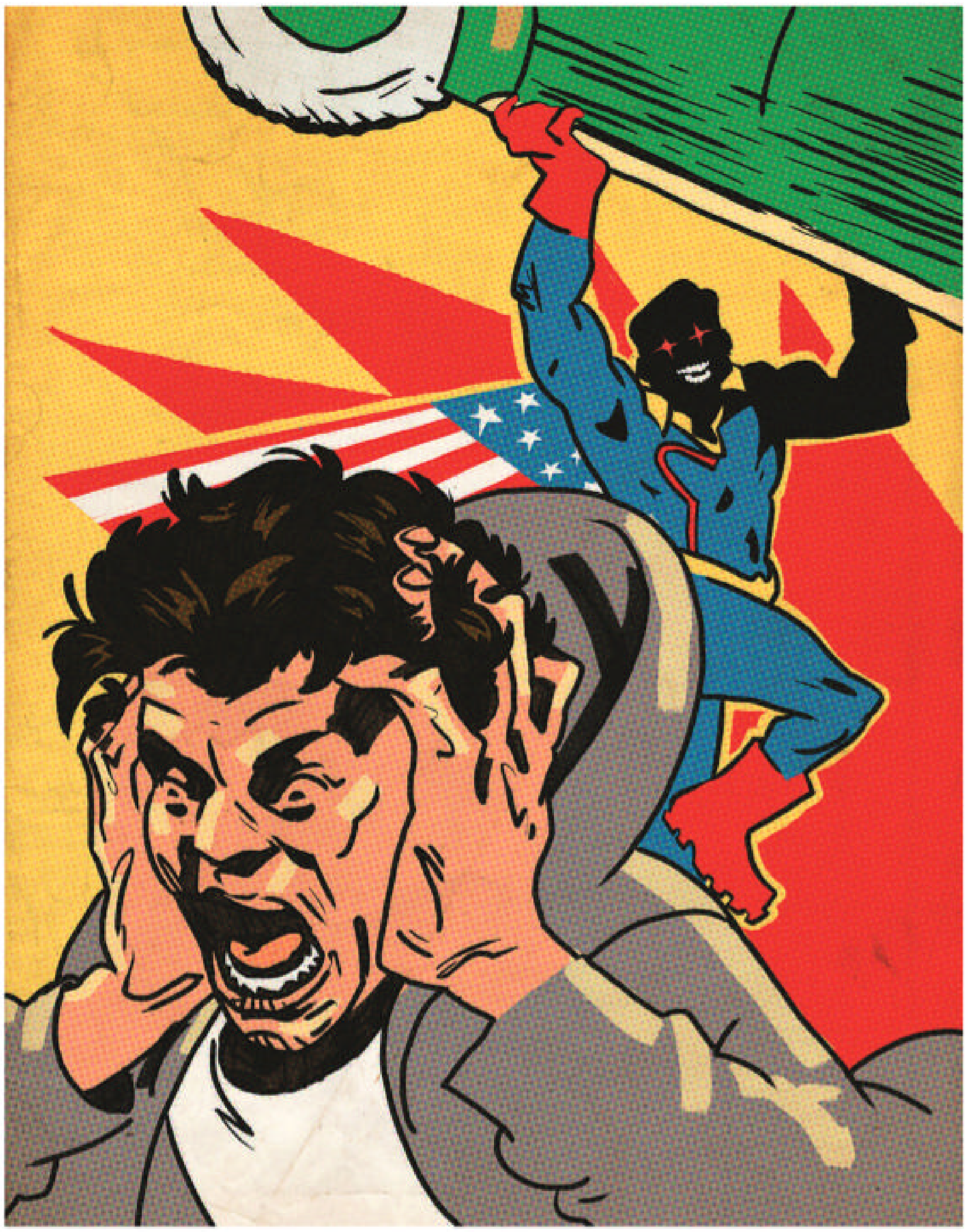
ON TELEVISION

THE AMERICAN WAY

"The Boys," on Amazon.

BY DOREEN ST. FÉLIX



In reality, superhuman speed might come with drawbacks. As Hughie Campbell (Jack Quaid), the reluctant lionheart of Amazon's superhero satire, "The Boys," discovers, a body streaking through space is essentially a scythe. Quaid's parents are the actors Dennis Quaid and Meg Ryan; his genes have endowed him with parodically sweet button features, which he scrunches to great effect as Hughie realizes, to his horror, that his girlfriend, Robin, with whom he has just been chatting on a New York City sidewalk, has been unceremoniously pulverized by the fastest man in the world, a superhero known as A-Train (Jessie T. Usher). Hughie is still clasping her hands after her other parts have been strewn all over the curb, his precious face Pollocked with her blood.

Robin's killing precipitates Hughie's loss of innocence and ignites the giddily twisted action of "The Boys." The America of the show is, even more than our own, in thrall to superhero culture. A-Train is a member of the Seven, a warped mirror of the Justice League. These crusaders, all crossed arms and corsets, are, ominously, also police; when not starring in billion-dollar movie franchises, they are contracted to protect cities across the country. Until Robin's death, Hughie had been just another schmuck, working at an audio-equipment store and living with his father, his bedroom walls still papered with posters of the Seven—a reminder of our adult thirst for what might be deemed childish art. Hughie expects restitution for his loss; instead, A-Train's keepers at the entertainment conglomerate Vought International try to send him on his way with a check and an N.D.A. Superheroes—they're just like us.

The superhero satire takes gleeful aim at the monopoly of the Marvel machine.

Eric Kripke has adapted "The Boys" from the comic of the same name, first published in 2006, written by Garth Ennis and illustrated by Darick Robertson. Ennis's comics, among them "The Punisher" and "Preacher," are recognizable for their black comedy, shining ultraviolence, and absence of idealized victors; he has long harbored a disdain for traditional superhero narratives, with their tendency to impose fantasy politics onto real-life war. (Seth Rogen was an executive producer of AMC's adaptation of Ennis's "Preacher" and of "The Boys.") "The Boys" was a sendup of jingoistic comics; the television adaptation, now in its second season, takes gleeful aim at the cultural monopoly of the Marvel machine. If you can get past the sublime irony of Amazon hosting a critique of Disney, you might have a really good time.

Like HBO's "Watchmen," "The Boys" makes a point of deconstructing its own genre, but in "The Boys" there will be no maverick savior. The show is outlandish, pessimistic, and brutally funny. After Hughie is recruited into a band of vigilantes by Billy Butcher (Karl Urban), an independent contractor of sorts who has also been tragically wronged by Vought, an unruly revenge plot begins. ("You're like the fucking Rain Man of fucking people over!" one character tells Hughie.) The first season follows the unravelling of the vast conspiracy that is Vought International, which turns out to be co-signed by the closeted, tattooed superhero leader of a hipster evangelical church. The alliance between Hollywood and the military is an old open secret, and "The Boys" mines it ruthlessly; Vought's chief executive, Madelyn Stillwell (Elisabeth Shue), is especially set on securing a

ILLUSTRATION BY POLA MANELI

military contract with the Pentagon.

The public faces of the Seven hide orgiastic hedonism, drug addiction, and indiscriminate murder. Queen Maeve (Dominique McElligott) is an alcoholic Wonder Woman delivering feminist bons mots through perfect, clenched teeth. A-Train is our Flash, Black Noir a mute Black Panther. The Deep (Chace Crawford), a bizarro Aquaman, is the sort of pretty man who corners new Vought employees in the boardroom—his mewling characterization, rooted in a trauma, is a retort to the knee-jerk villainization of predatory men. The trickiest character is Starlight, whose conventional goodness is a necessary counterweight to the depravity of her elders. Starlight is a foil to the gleaming Homelander, sensationally played by Antony Starr as a perverted amalgam of Captain America, Superman, and, if you squint, a certain President in his youth. His maladjustment turns out to be chemical: the reveal of the first season is that the "supes" are souped up—not born but made in a lab, unknowingly dosed, as infants, with a performance-enhancement drug called Compound V.

The comedy of "The Boys" is at its best when it is unsubtle, full of gags, Rogenesque. But the series also abides by the formula of liberal satires, and a smugness attends lines such as "Caucasians love him, too" and "All we can say is he's fighting MS-13." Ennis's Bush-era comic was published too early to puncture franchise fever at its height; the satire of "The Boys," by contrast, feels a little late. The Marvel and DC Comics Zeitgeist has so taken hold of the culture that jokes about it rarely feel revelatory or lawless. "The Boys" sometimes acts like the thing it's lampooning. There is the cartoonish violence, the preponderance of exploding heads and splayed limbs. And then there is the social and interpersonal violence, the allusions to police brutality and white supremacy. One completely tasteless flashback, in which a superhero murders a Black teen-ager in front of his sister, ends with a lurid shot of the child's smashed face.

In the first season's standout episode, which skewers pro-war 9/11 films, a passenger plane is commandeered by terrorists, who, in the way of the trope, are all brown skin and placeless grievance. Stillwell sends Maeve and Homelander for what is meant to be a clutch photo op, a rescue to grease the wheels of the Pentagon contract. The mission goes awry, and Homelander abandons the passengers. Back on land, he finds a way to spin the human collateral damage, and the dead become grist for a manufactured global war on terror in which only the Seven can protect the West.

Season 2 doubles down on political allegory, returning to the genesis of Vought and the story of its namesake founder, a buddy of Hitler's. Historical fascism gives way to contemporary alt-right politics. I loved an opening sequence—spoilers ahead—that depicted the morning routine of a young man, who wakes up, embraces his mother, and goes to the bodega before settling in at his computer, the reflection of alt-right propaganda against "supe terrorists" gleaming on the lenses of his glasses. His slow radicalization by a white-supremacist superhero culminates in an act of violence so familiar that it feels pulled from the fabric of our own reality. The narrative seemed, to me, a necessary aberration, an admission of artistic limitations. The kind of satire that in the past could make us feel morally superior may no longer be possible.

The nameless young man was doing the bidding of the newest member of the Seven, Stormfront (Aya Cash). She starts out as a brassy, side-shaven bad bitch, calling out screenwriters for their chauvinism. Then she goes on to fulfill the destiny of her name, upstaging even Homelander, who is still figuring out the kind of white supremacist he'd like to be. Suggesting that he follow her lead in hiring a team of professional Internet trolls to boost his popularity, Stormfront purrs, "Emotion sells. Anger sells. You have fans. I have soldiers." Stormfront's passing resemblance to the far-right conspiracy theorist Laura Loomer is not incidental, but, careful not to infringe on anyone's intellectual property, she comes up with a slogan that is all her own: "Keep America safe again!" ♦

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1. Location of known office of Publication is One World Trade Center, New York, N.Y. 10007.

2. Location of the Headquarters or General Business Offices of the Publisher is One World Trade Center, New York, N.Y. 10007.

3. The names and addresses of the publisher, editor, and managing editor are: publisher, Eric Gillin, One World Trade Center, New York, N.Y. 10007; editor, David Remnick, One World Trade Center, New York, N.Y. 10007; managing editor, Leily Kleinbard, One World Trade Center, New York, N.Y. 10007.

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5. Known bondholders, mortgagees, and other security holders owning or holding one per cent or more of total amount of bonds, mortgages, or other securities are: None.

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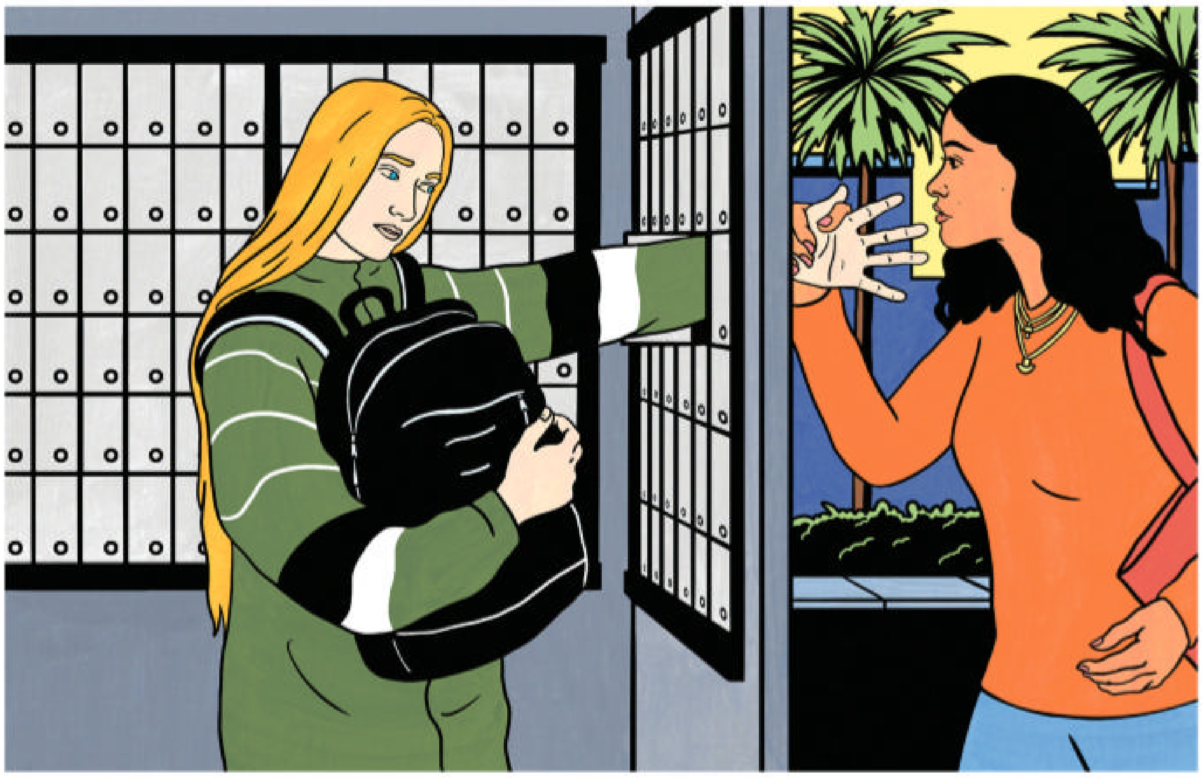
THE CURRENT CINEMA

ALL IN THE FAMILY

"Kajillionaire" and "The Artist's Wife."

BY ANTHONY LANE

When it comes to freaky families, whom do you think of first? The Munsters, the Addamses, the Borgias, the Romanovs, the Tenenbaums, or the Trumps? How about the House of Atreus? The list is a distinguished one, and it's blessed by the arrival of a new bunch, in Miranda July's "Kajillionaire." Say hello to the Dynes, who number precisely three: Robert (Richard Jenkins), his wife, Theresa (Debra Winger), and their daughter, Old Dolio (Evan Rachel Wood), who is twenty-six. They may lack imperial trappings, and their wealth, as yet, is not the stuff of legend. In the noble art of clipping coupons, however, or of collecting the half-eaten snacks that other passengers have left behind on airplanes, the Dynes are unsurpassed.



Evan Rachel Wood and Gina Rodriguez star in Miranda July's film.

They live in Los Angeles, which is something of a joke, since they don't have a car. Or, for that matter, a home. Their current dwelling is a bubble factory, if you please, where they bed down on the office floor. Clouds of pink foam keep frothing through cracks at the top of the wall and creeping downward—a silly, non-scary version of the blood that surges in from the elevator's edge in "The Shining" (1980). Needless to say, the Dynes are behind on rent; the building manager looks terribly upset about it, though his tears are involuntary. "I have no filters," he says. In a bid to elude him, the family goes into contortions whenever they pass the factory, bending down or, in the case of Old Dolio, leaning perilously backward, like a limbo dancer. Filmed from the side, in a travelling shot, they look like an experimental-ballet troupe.

Fans of July, who directed "Me and You and Everyone We Know" (2005) and "The Future" (2011), will be cool with this level of weirdness, because she herself is forever medium cool. The foibles of her characters require no explanation, and we never quite learn how the Dynes became the Dynes. Did they once have money, a place of their own, and steady jobs, and then lose everything, or is dispossession their natural state? Either way, they now subsist on scavenging and scams; the movie kicks off with a heist, as Old Dolio—who, like her mother, has a long and listless curtain of hair—enters a post office in a series of leaps and rolls. She looks like a hippie commando. Once inside, she filches packages from other people's mailboxes, with a view to selling the contents or claiming a refund. As crime goes, it lacks a little pizzazz. Imagine the hoodlums in "Heat" (1995) storming a bank and coming away with a necktie.

While you're wondering how long the rest of the movie can, or should, noodle along in this kooky fashion, up springs a plot. A young woman, Melanie (Gina Rodriguez), makes the family's acquaintance and, bringing along a bright idea for a hustle, joins the slipstream of their turbid days. In particular, she befriends Old Dolio—who was named, apparently, for a lottery-winning homeless man, in the hope that he might offer her a legacy. (No luck.) There's a lovely scene in which the two women visit a supermarket, with Old Dolio pointing out the aisles where, thanks to a security-camera blind spot, shoplifting would be a steal. Melanie's plan is bolder still: she's going to *pay* for what's in her cart. Talk about radical.

The movie needs Rodriguez, whose demeanor, upbeat and no-nonsense, interrupts the lilt of eccentricity that prevails elsewhere. Whereas Old Dolio's voice is a low and halting drone, all too fitting for someone so woefully unsocialized, Melanie delivers her lines with a snap and a smile. Yet even she has her secrets. Having told the Dynes that she's an assistant to an ophthalmologist at Cedars-Sinai, she later admits to working for a regular optician, selling bifocals to the aged. It's not a terrible lie, but it bolsters our impression that July's characters are not so much being themselves as playing themselves, so to speak, and continually tweaking who they wish to be. Hence the unnerving ease with which, after sneaking into the house of a sick and elderly man ("He's trying to die," Old Dolio reports), they settle in at their leisure. Theresa dons an apron and serves cake; Robert watches golf on TV. "I think I *will* mow the lawn tomorrow," he announces. They could get used to this existence. Millions of folks do.

No one seeks out a movie like this in search of rage, let alone political heft, yet there are stirrings of disquiet—if not of outright protest—as Melanie

ILLUSTRATION BY LIAM EISENBERG

urges Old Dolio to step back, for the first time, and inspect her parents from a distance. (We all attempt this, at our own pace; to an extent, she's just a late starter.) Is their attitude something worse than wacky? In a pinch, would they rob their daughter? Might they be, as Melanie dares to suggest, "monsters"? What's unusual about "Kajillionaire," and what makes it July's most absorbing film to date, is that you can feel her testing and challenging her own aptitude for whimsy. Think of her as an American descendant, many times removed, of Edward Lear, whose creatures, though frequently charming, are badgered by frustration or doomed to a punishing solitude. The Dynes remind me of the Jumblies, who, in Lear's telling, recklessly went to sea in a sieve, crying out, "How wise we are!"

Thus it is that Robert, strolling down a street, pauses to admire his reflection in a store window. "*Look* at this guy," he declares. "I feel like a senator!" Not that most senators would be prepared, as Robert is, to go around with an untucked shirt. (Those of us who love Richard Jenkins for his unique fusion of the absent-minded and the frowningly intense will delight in his portrayal of Robert, who is not so weary of the world that he won't milk it for every drop he can get.) When Melanie says that "most happiness comes from dumb things," she's being honest rather than sententious, and July uses "Kajillionaire" to present her credentials as a transcendentalist of the humdrum. Look at Old Dolio buying fat bags of snacks in a convenience store, in the aftermath of a very minor earthquake, which she believes to be "the big one." Notice the sunlight flaring through her hair as she dances, badly and wildly, or the extreme closeup of her fingers as she prizes off Melanie's acrylic nails, making every effort not to hurt her. Life can be as mean as sin, and pleasure can pop at any moment. You have to catch the bubbles while you can.

If you have enjoyed the company of the Dynes, watch out. You may find it hard to adjust to more orthodox souls, however grave their problems. Take the Smythsons, of East Hampton, whose saga we follow in "The Artist's Wife." Richard Smythson (Bruce Dern) is a celebrated painter. He is married to Claire (Lena Olin), who renounced her own artistic career, years ago, in favor of his. By an earlier relationship, he has a daughter, Angela (Juliet Rylance), from whom he is estranged. He has never met her son, Gogo (Ravi Cabot-Conyers), who is six. The winter of Richard's discontent is a harsh season, and he has all but frozen solid, slathering a canvas with ice-white paint. He keeps losing his manners and his temper—as creative persons, for some reason, are allowed or encouraged to do. What Claire fears, though, is that he is also mislaying his mind.

It is soon confirmed that Richard has Alzheimer's, though whether the film, directed by Tom Dolby, is specifically about dementia—as were "Away from Her" (2007), with Julie Christie, and "Still Alice" (2015), with Julianne Moore—is open to debate. The medical aspects of the case begin and end with a sequence in which Claire picks up a prescription. Other than that, she seems oddly unbothered by practicalities, nipping into New York for the day, or for a boozy night, and leaving her husband to fend for himself. What grieves her is the way that he turns on her, as if to mock the sacrifice that she has made. Is it his recent decline that causes such rages to erupt, or have they always been there, below the crust? Lurking in this tale is a scalding proposition: maybe artists come with a dementia of their own, quick to blank out the needs of others without any help from a degenerative disease.

If only the style of "The Artist's Wife" could scald with equal intent. Alas, it opts for plangency, with a musical score applied like a gentle balm, and a plot that hungers for healing—absurdly so, given the incurable nature of Richard's plight. Claire has a near-fling with Gogo's handsome babysitter, Danny (Avan Jogia), and even he suffers from inventive yearnings, solemnly presenting her with a CD of his songs. Jeez, couldn't *someone* here be nonartistic? Any chance of an accountant showing up? On the other hand, if it's serious choler you want, then Dern, at eighty-four, is still your guy, with the toothy thrust of his jaw as militant as ever, and his grin morphing into a snarl. As for Olin, she makes Claire both ravishing and ravaged, and I couldn't help recalling Ingmar Bergman's "After the Rehearsal" (1984), in which the youthful Olin played an actress who, like Claire, did intimate battle with an older man. The closeups were unwavering, and the whole thing was shot without music and set on the bare boards of a theatre. That's the way to do it. ♦

NEWYORKER.COM

Richard Brody blogs about movies.

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VOLUME XCVI, NO. 29, September 28, 2020. THE NEW YORKER (ISSN 0028792X) is published weekly (except for four combined issues: February 17 & 24, June 8 & 15, July 6 & 13, and August 3 & 10) by Condé Nast, a division of Advance Magazine Publishers Inc. PRINCIPAL OFFICE: Condé Nast, 1 World Trade Center, New York, NY 10007. Eric Gillin, chief business officer; Lauren Kamen Macri, vice-president of sales; Rob Novick, vice-president of finance; Fabio B. Bertoni, general counsel. Condé Nast Global: Roger Lynch, chief executive officer; Wolfgang Blau, chief operating officer and president, international; Pamela Drucker Mann, global chief revenue officer and president, U.S. revenue; Anna Wintour, U.S. artistic director and global content advisor; Mike Goss, chief financial officer; Samantha Morgan, chief of staff. Periodicals postage paid at New York, NY, and at additional mailing offices. Canadian Goods and Services Tax Registration No. 123242885-RT0001.

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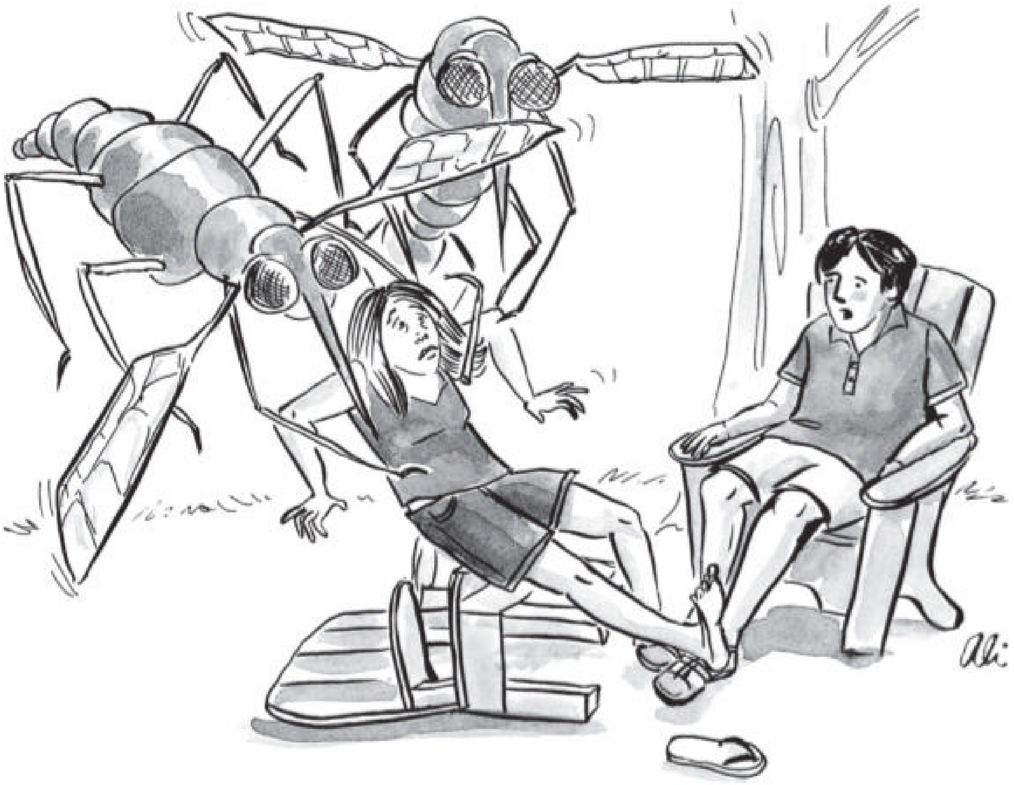
CARTOON CAPTION CONTEST

Each week, we provide a cartoon in need of a caption. You, the reader, submit a caption, we choose three finalists, and you vote for your favorite. Caption submissions for this week's cartoon, by Ali Solomon, must be received by Sunday, September 27th. The finalists in the September 14th contest appear below. We will announce the winner, and the finalists in this week's contest, in the October 12th issue. Anyone age thirteen or older can enter or vote. To do so, and to read the complete rules, visit contest.newyorker.com.

THIS WEEK'S CONTEST



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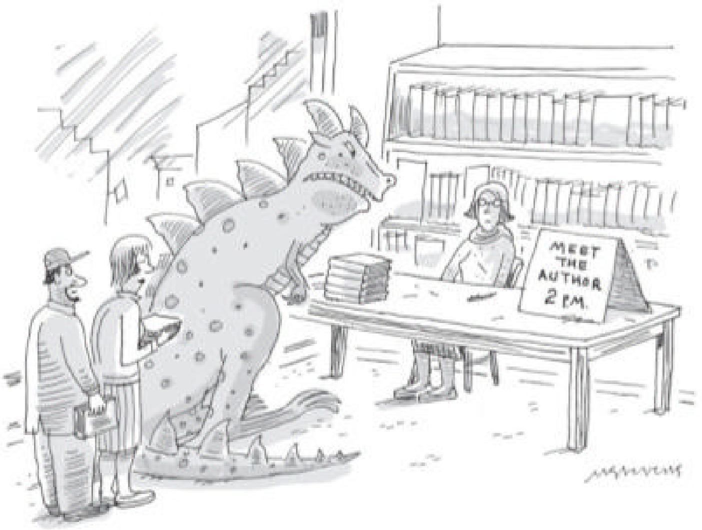
THE FINALISTS

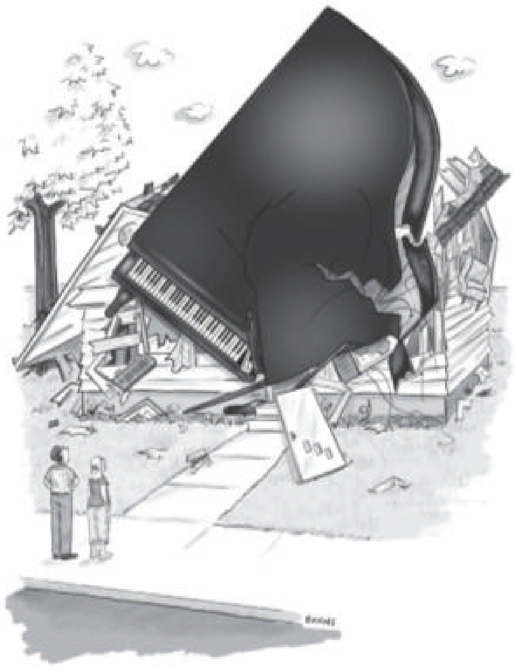

MEET THE AUTHOR 2 P.M.

“To Archaeopteryx, spelled just like it sounds.”
David Norcross, Melrose, Mass.

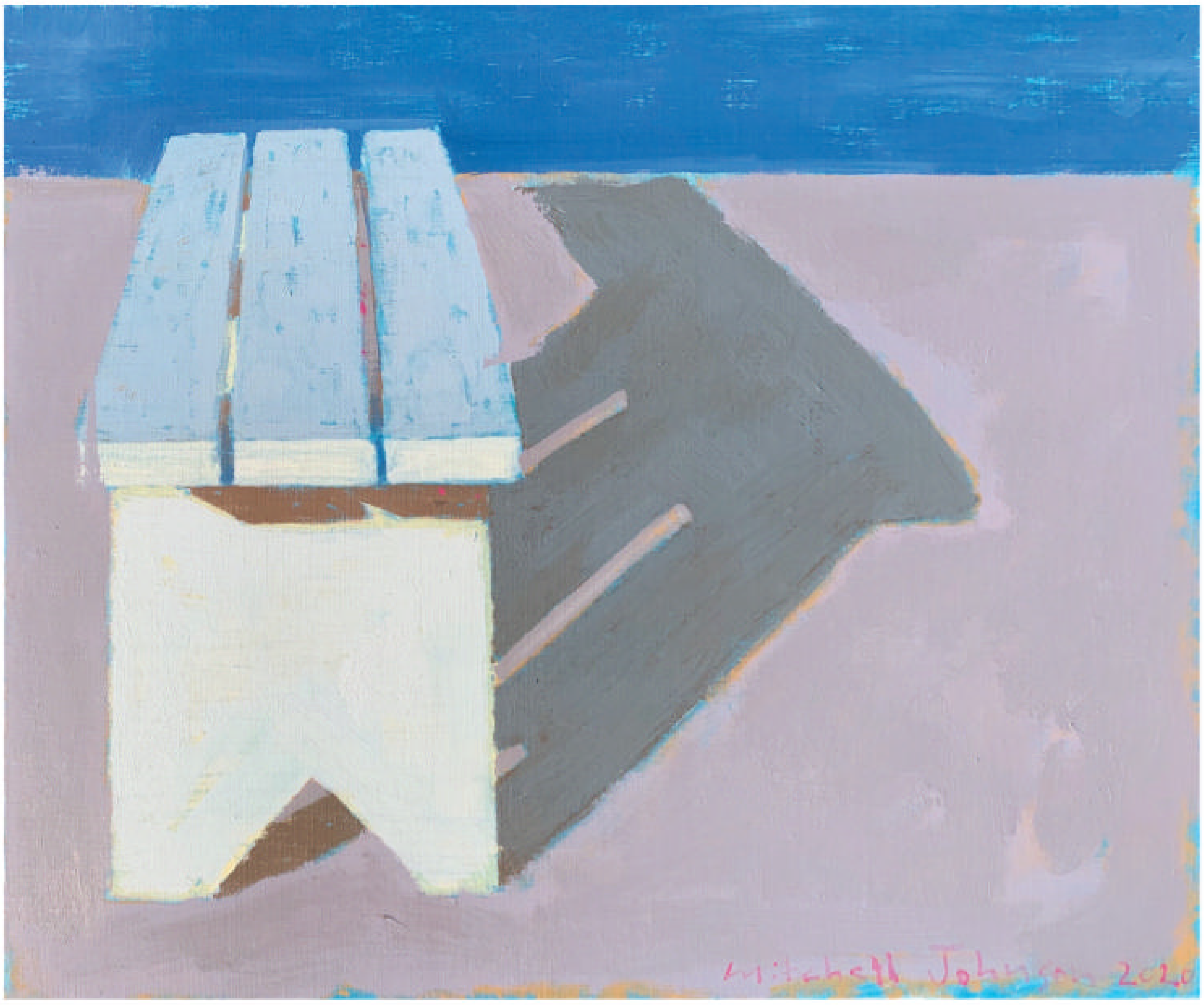
“I'm also a voracious reader.”
Craig Lawless, Minneapolis, Minn.

“I couldn't put it down. In fact, I couldn't pick it up.”
Jeff Sawyer, Whitefield, N.H.

THE WINNING CAPTION



“The piano's in tune, but the house is a little flat.”
Walter Gray, Middleton, Wis.



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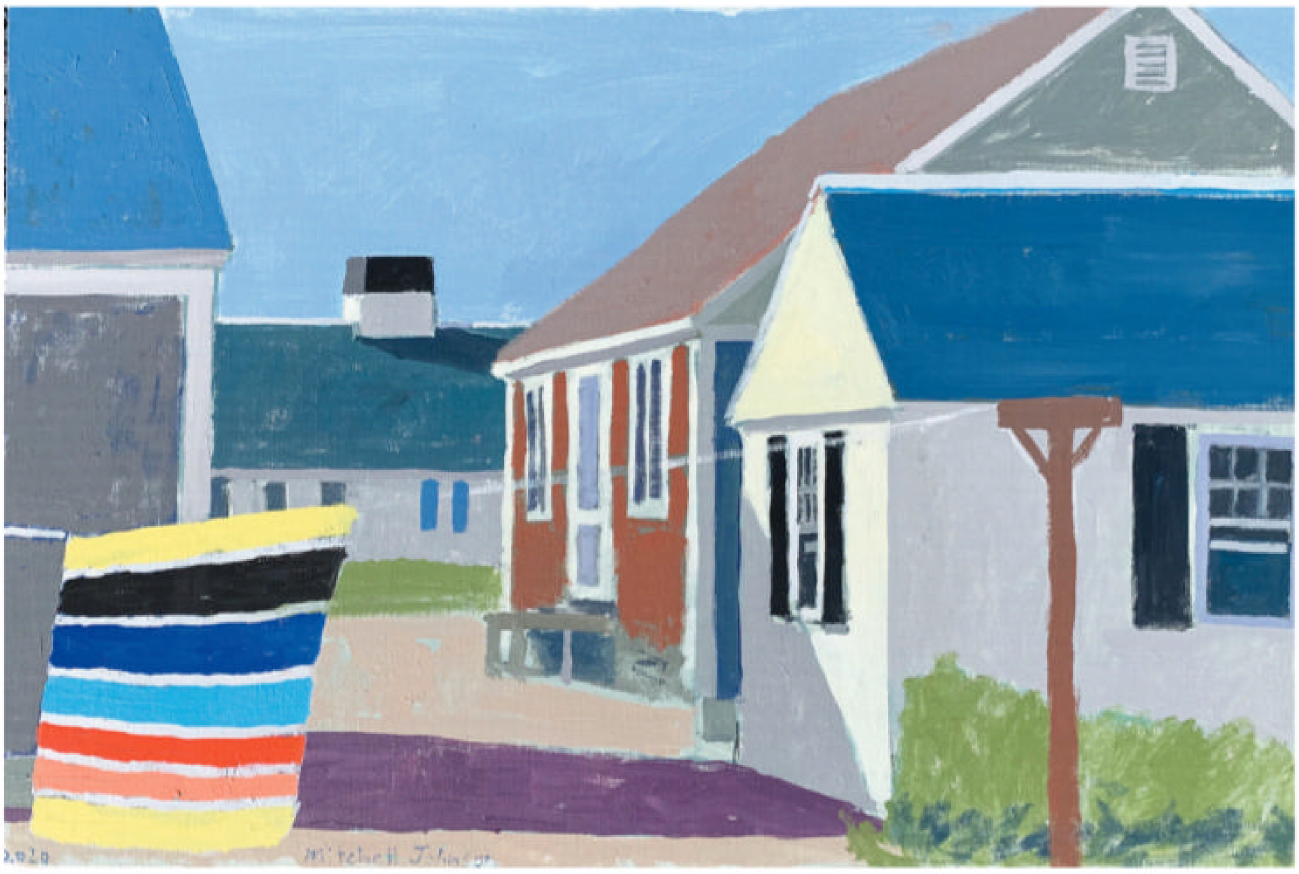

Top: **Race Point Bench Three**, 2020, 20 x 24 inches, oil/linen, $10,000. *Above:* **North Truro Towel**, 2020, 20 x 30 inches, oil/linen, $12,000.

Mitchell Johnson of Menlo Park, California—an American Academy in Rome Visiting Artist (2015) and a Josef and Anni Albers Foundation Artist in Residence (2007)—is the subject of the monograph, *Color as Content*, and the documentary film, *The Artist of Silicon Valley*. Johnson's color- and shape-driven paintings are known for their very personal approach to color and have been exhibited in Milan, New York, San Francisco, and Los Angeles. Johnson divides his time between his favorite painting locations in Europe, New England, New York City, Asia, and California. His paintings are in the collections of 28 museums and over 600 private collections. The most recent museum acquisitions were by Museo Morandi in Bologna, Museum of Modern Art in Rome, Tucson Museum of Art, and Crocker Art Museum in Sacramento. Johnson moved to the Bay Area in 1990 after finishing his MFA at Parsons in New York.